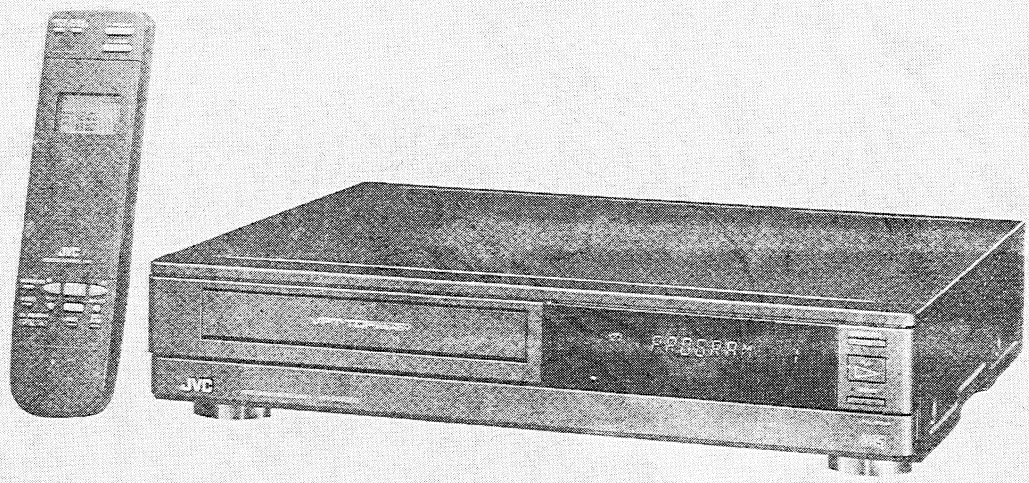
# JVC

# SERVICE MANUAL

## VIDEO CASSETTE RECORDER VHS

# HR-D560E/EG



## SPECIFICATIONS

### GENERAL

| | | |
|---|---|---|
| Power requirement | : | AC 220 – 240 V~, 50/60 Hz |
| Power consumption | : | 29 W |
| Temperature | : | 5°C to 40°C (Operating) |
| | : | –20°C to 60°C (Storage) |
| Operating position | : | Horizontal only |
| Dimensions (WxHxD) | : | 435 x 94 x 335 mm |
| Weight | : | 5.2 kg |
| Format | : | VHS PAL standard |
| Tape width | : | 12.65 mm |
| Tape speed | : | 23.39 mm/sec |
| Maximum recording time | : | 240 min. with E-240 video cassette |

### VIDEO

| | | |
|---|---|---|
| Signal system | : | PAL colour and CCIR monochrome signals, 625 lines/50 fields |
| Recording system | : | Rotary two-head helical scan system |
| Input | : | 0.5 to 2.0 Vp-p, 75 ohms, unbalanced |
| Output | : | 1.0 Vp-p, 75 ohms, unbalanced |
| Signal-to-noise ratio | : | 43 dB (Rohde & Schwarz noise meter) |
| Horizontal resolution | : | 250 lines |

### AUDIO

| | | |
|---|---|---|
| Recording system | : | Longitudinal track |
| Input | : | –3.8 dBs, (CENELEC standard) more than 50 k-ohms, unbalanced |
| Output | : | –3.8 dBs, (CENELEC standard) less than 1 k-ohm, unbalanced (100 k-ohms, load) |
| Frequency range | : | 70 Hz to 10,000 Hz |

### TUNER

| | | |
|---|---|---|
| Tuning system | : | Frequency synthesized tuner |
| TV channel storage capacity | : | 48 positions (+ AUX position "AU") |
| Channel coverage | : | VHF 47 — 111 MHz<br>111 — 300 MHz<br>302 — 470 MHz<br>(Hyper band for PAL) |
| | | UHF 470 — 862 MHz |
| Aerial output | : | UHF channel 36 (adjustable 32 — 40) |

### TIMER

| | | |
|---|---|---|
| Clock reference | : | Quartz-crystal |
| Programme capacity | : | 1-year/8-programme timer |
| Memory backup time | : | 60 min. |

### ACCESSORIES

| | | |
|---|---|---|
| Provided accessories | : | Aerial cable<br>Infrared remote control unit<br>"R6" battery x 2 |
| Optional accessories (EG) | : | VPV adapter VU-V120E<br>VPT adapter VU-V140E |
| Optional accessories (E) | : | VPS adapter VU-V110E<br>VPV adapter VU-V120E<br>VPS/VPV adapter VU-V100E<br>VPT adapter VU-V140E<br>VPS/VPT adapter VU-V150E |

Design and specifications subject to change without notice.

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March 1991

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# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   **Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

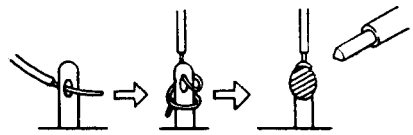

Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

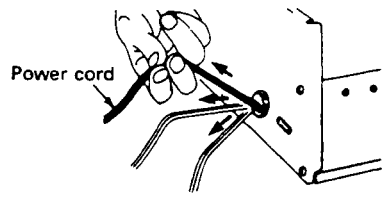


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

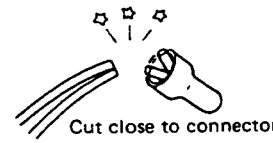


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

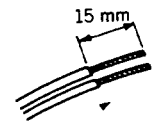


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

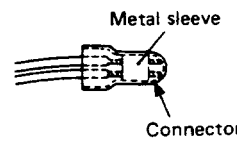


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

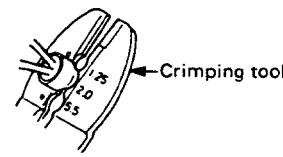


Fig. 6

(5) Check the four points noted in Fig. 7.

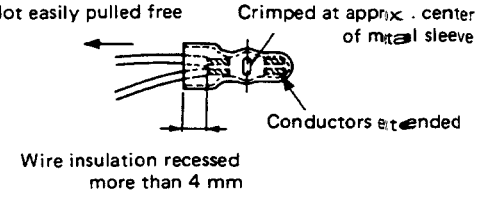
Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

# ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

**1. Insulation resistance test**

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**2. Dielectric strength test**

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**3. Clearance distance**

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

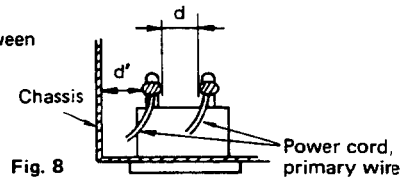


Fig. 8

**4. Leakage current test**

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method:** (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

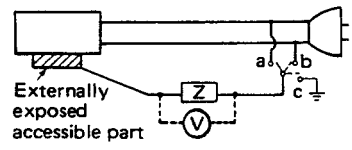


Fig. 9

**5. Grounding (Class I model only)**

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

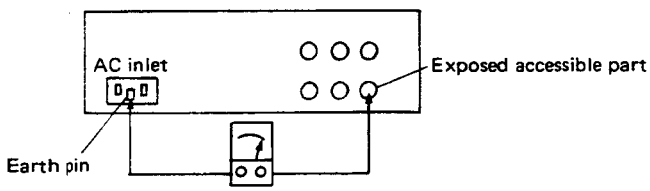


Fig. 10

**Grounding Specifications**

| Region | Grounding Impedance (Z) |
|---|---|
| USA & Canada | Z ≦ 0.1 ohm |
| Europe & Australia | Z ≦ 0.5 ohm |

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
|---|---|---|---|---|
| 100 V | Japan | R ≧ 1 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3 mm |
| 100 to 240 V | | | AC 1.5 kV 1 minute | d, d' ≧ 4 mm |
| 110 to 130 V | USA & Canada | – | AC 900 V 1 minute | d, d' ≧ 3.2 mm |
| 110 to 130 V<br>200 to 240 V | Europe & Australia | R ≧ 10 MΩ /500 V DC | AC 3 kV 1 minute (Class II)<br>AC 1.5 kV 1 minute (Class I) | d ≧ 4 mm<br>d' ≧ 8 mm (Power cord)<br>d' ≧ 6 mm (Primary wire) |

**Table 1** Specifications for each region

| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
|---|---|---|---|---|
| 100 V | Japan | 1 kΩ | i ≦ 1 mA rms | Exposed accessible parts |
| 110 to 130 V | USA & Canada | 0.15 μF, 1.5 kΩ | i ≦ 0.5 mA rms | Exposed accessible parts |
| 110 to 130 V<br>220 to 240 V | Europe & Australia | 2 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Antenna earth terminals |
| | | 50 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Other terminals |

**Table 2** Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# Safety Precautions

The rating plate and the safety caution are on the rear of the unit.

**WARNING — DANGEROUS VOLTAGE INSIDE**
**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.**

**IMPORTANT (In the United Kingdom)**
**Mains Supply (240 V~, 50 Hz only)**

**IMPORTANT**

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with the following code:

Blue to N (Neutral) or Black
Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
***If in doubt — consult a competent electrician.***

**Omkopplaren OPERATE på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge OPERATE OFF.**

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

**BEMAERK:** I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skal netledningen trækkes ud.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

## CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

**WARNING**

There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

**IMPORTANT:** It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.

VHS PAL HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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**How To Use This Instruction Manual**

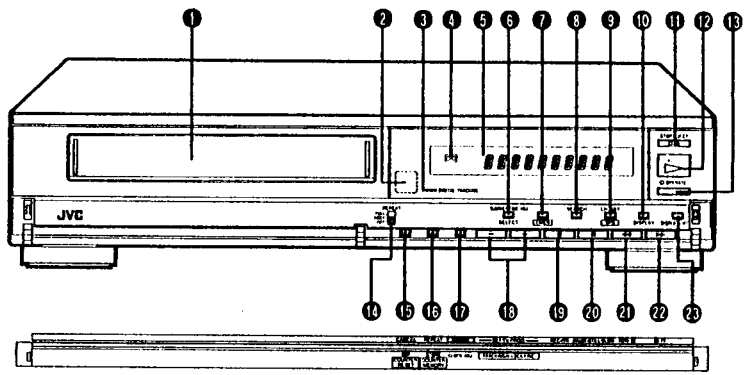
This instruction manual has been designed with both new and experienced users in mind. The first half offers detailed, step-by-step instructions for setting up your video recorder, and on using its basic functions. The second half provides instructions on the many other functions available on your video recorder. So just by following the instructions on the "Getting Started" and "Basic Operation" sections of this manual, you can master all of your recorder's basic functions, including timer-recording. Once you're sufficiently familiar with basic operation, or if you're already an experienced video user, you can move on to the more advanced functions introduced on the following pages. Related features have all been clustered together for easy reference, and their categories (playback, recording, timer, etc.) are easily recognisable by the symbol appearing in the page header. If you ever need to refer to another page for instructions or information, you will be told so by a ☞ mark pointing to the page number.

Remember, you must use your video recorder correctly to fully enjoy it. Please use this manual effectively. It's the surest and quickest way to unlock the full potential of your new JVC video recorder.

This instruction manual covers two model versions: "EG" and "E". Be sure to check which model you have purchased.
EG: VPS decoder built-in.
E: VPS decoder not built in. You must connect an optional adapter to take advantage of VPS service. ☞ p.22

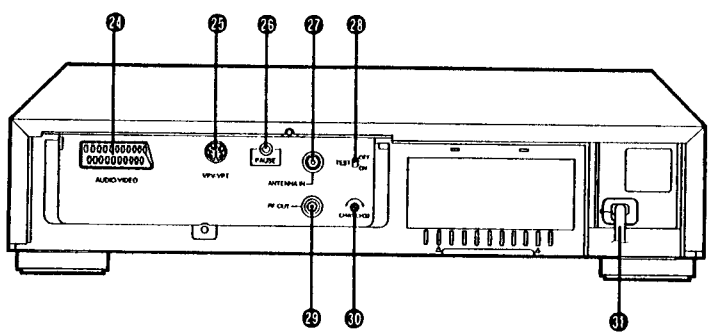
# Controls, Indicators, And Connectors

## Front Panel



❶ Cassette loading slot
❷ Infrared beam sensor window
❸ DIGITAL TRACKING indicator
❹ "Cassette loaded" indicator
❺ Message display panel ☞p.15, 28
❻ SUMMER TIME ADJ./SELECT button
❼ TIMER button
❽ SEARCH button
❾ CH SET/VPS button
❿ DISPLAY button
⓫ STOP/EJECT button
⓬ PLAY button
⓭ OPERATE button with LED indicator
⓮ REPEAT (FULL/INDEX/OFF) switch
⓯ CANCEL/SKIP/COUNTER RESET button
⓰ REPEAT/STORE/COUNTER MEMORY button
⓱ PROGRAM/CLOCK ADJ. button
⓲ SET/TV PROG./TRACKING/ V.LOCK/FINE buttons
⓳ REC/ITR button
⓴ PAUSE/STILL/SLOW button
㉑ REW (Rewind) button
㉒ FF (Fast Forward) button
㉓ DISPLAY OFF button

## Back Panel

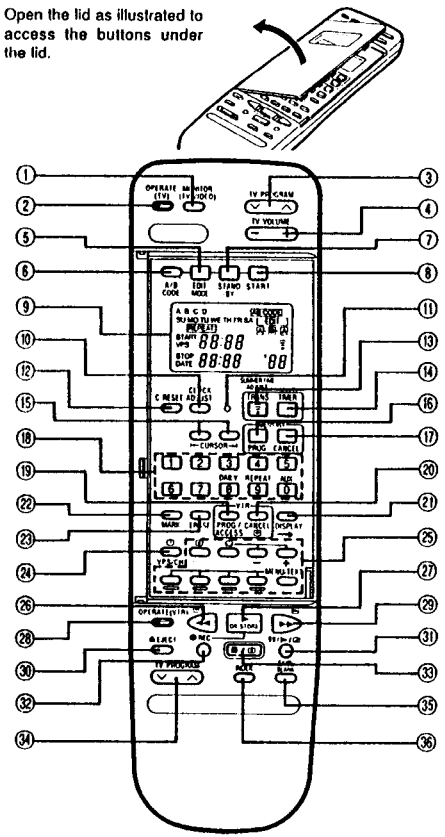


㉔ AUDIO/VIDEO connector
㉕ VPV/VPT (VPS/VPV/VPT) connector
㉖ REMOTE PAUSE terminal.
㉗ ANTENNA IN terminal
㉘ TEST switch
㉙ RF OUT terminal
㉚ RF output channel adjustment screw ☞p.7
㉛ Power cord



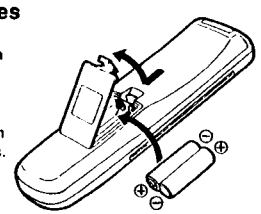
## Wireless Remote Control

Open the lid as illustrated to access the buttons under the lid.



### Installing Batteries

1. Slide the battery compartment cover in the direction of the arrow.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.



**TV Operation (designated TV models only)**
① MONITOR (TV/VIDEO) button
② OPERATE (TV) button
③ TV PROGRAM ∨/∧ button
④ TV VOLUME −/+ button

**A/B Code Changing and Duet Editing**
⑤ EDIT MODE button ☞p.24
⑥ A/B CODE button ☞p.24
⑦ STAND BY button ☞p.24
⑧ START button ☞p.24

**LCD, Timer, Tuner and Tape Counter**
⑨ LCD (Liquid Crystal Display)
⑩ LCD CLOCK ADJUST button ☞p.9
⑪ LCD RESET hole
⑫ C. (Counter) RESET button
⑬ TRANS (Transfer)/SUMMER TIME ADJUST button ☞p.9
⑭ TIMER button ☞p.14
⑮ CURSOR buttons ☞p.9
⑯ MEMORY PROG (Program) button
⑰ MEMORY CANCEL button
⑱ Multi-Purpose Numeric keys
⑲ VTR PROG. (Program) button
⑳ VTR CANCEL button
㉑ DISPLAY button

**Special Functions**
㉒ MARK button ☞p.18
㉓ ERASE button ☞p.18
㉔ VPS/CH button

**Teletext Operation**
㉕ Teletext Operation buttons
(These buttons function only when an optional teletext adapter (☞p. 27) is connected to your video recorder.)

**Basic Operation**
㉖ Rewind (◄◄) button
㉗ Play (►) button
㉘ OPERATE (VTR) button
㉙ Fast Forward (►►) button
㉚ EJECT button
㉛ Pause/Still/Slow button (❚❚/►) button
㉜ Record (● REC) button
㉝ Stop (■) button
㉞ TV PROGRAM ∨/∧ button
㉟ SKIP/BLANK button
㊱ INDEX button ☞p.18

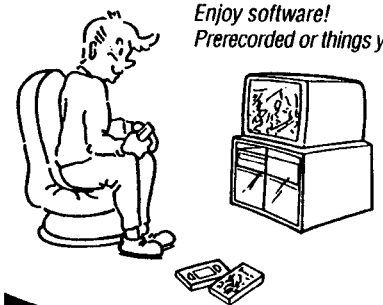
**NOTE:**
Some buttons have additional labels (mostly pictograms) for teletext operations. You will find instructions for these in the Instruction Manual of the teletext adapter.

**How To Use**
The remote control can operate most of your video recorder's functions, as well as basic functions of designated JVC TV sets.
- Point the remote control at the sensor window.
- The maximum operating distance of the remote control is about 8 m.

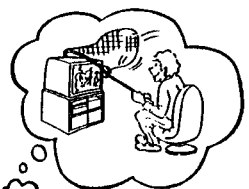
**NOTE:**
If necessary, you can clear and initialise the LCD memory by inserting a pointed object such as a pencil in the LCD RESET hole ⑪ and pushing the switch located inside. Normally, there is no need to touch this switch.

# Getting To Know Your Video Recorder

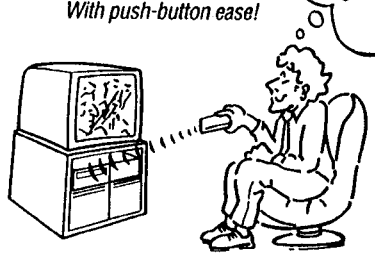
## The 3 Basic Ways Of Using Your Video Recorder



*Enjoy software!*
*Prerecorded or things you've recorded!*

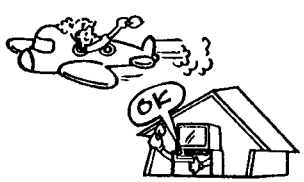


*Catch a TV programme!*
*With push-button ease!*



### Playback

With the video recorder properly hooked-up to your TV set, viewing videos is as easy as pushing the Play button. Prerecorded VHS software is available just about anywhere, and your video recorder will let you enjoy it all. And, of course, you can enjoy those programmes you've recorded yourself too.




*Record TV programmes while you're away.*
*Watch TV programmes when you want.*

### Recording

Just press the Record and Play buttons together on your remote control. The recorder will record whatever it is that you're watching. In other words, you can instantly "catch" a TV programme in progress to see it again later, show it to someone else, or keep it as part of your video library. Recording is possible for 4 hours on a single E-240 cassette.

### Timer-Recording

By using the built-in timer, you can set your video recorder to record TV programmes for you while you're asleep, while you're away, or while you're doing something else. Then you can watch those programmes later, whenever it's convenient, whenever you want. This is what's called "timeshifting", and now you can do it the JVC way.



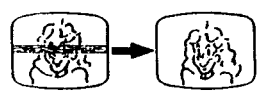
## Some Other Functions On Your Video Recorder

### "Message" Display Panel

The video recorder "talks" to you from its message display panel. It's easy to understand what the recorder is doing at any time — a friendlier way to interact with your video deck.

### Repeat Playback

Automatic repeated playback of the whole tape or a programme segment. Lets you enjoy those favourite scenes and favourite songs again and again.

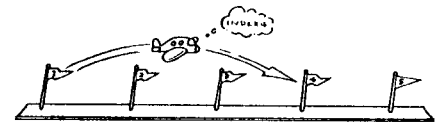


### Digital Tracking

Automatically controls video tracking to maintain the best video picture, even with tapes with excessive tracking variations. A must for rental software viewing.

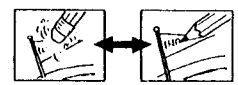
### Auto Head Cleaner

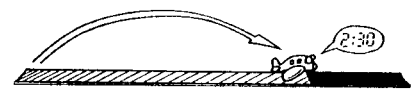
A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.



### Index Search

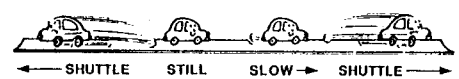
Zooms to the index code number you specify. Easy location of index-coded programmes at the touch of a button. Index codes are automatically marked by the recorder at the beginning of each recording. With index mark/erase, you can also add or delete index codes as you wish.





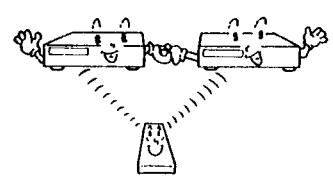

### Blank Search

Lets you find the beginning of a non-recorded section automatically when you want to record on a partially-recorded tape. No more blind searching. Automatically displays the tape's remaining time too.




### Still/Slow/Shuttle Search

Lets you stop the action or slow it down for a closer look at fast-moving sequences. Search for a specific scene at high speed in either direction.



### Duet Editing

Synchronized editing control over two JVC video recorders using one remote control.

# Making The Right Connections

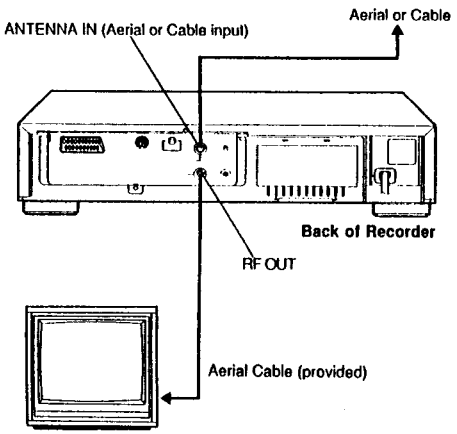
It's essential that your video recorder be properly hooked up for proper results. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

## A RECORDER-TO-TV CONNECTION

### RF CONNECTION

For TV sets without AV input terminals:

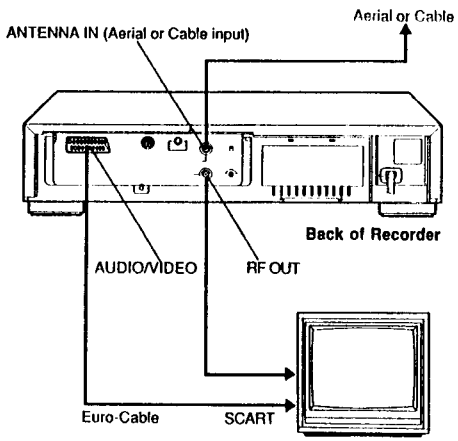
1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.




### AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's 21-pin SCART connector.

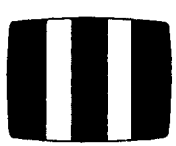



## B ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36. Fine-adjust the RF converter to match your TV.

### TEST SIGNAL

1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to UHF channel 36 and fine-adjust it until you bring in the two vertical white bars on the screen most clearly.
4. Reset the TEST switch to OFF.



### NOTE:

If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

### IMPORTANT:

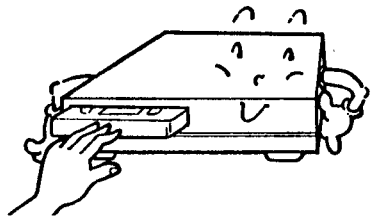
To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to UHF channel 36 (or adjusted channel). With an AV connection, set the TV to the VIDEO (or AV) mode.



# Handling Video Cassettes

## A LOADING A CASSETTE

1. Insert a cassette with its label side facing you.
   - If the cassette is not loaded firmly it will be ejected.



## B UNLOADING A CASSETTE

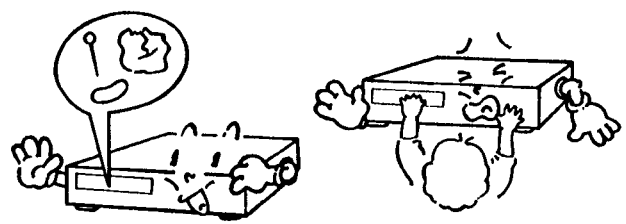
1. Press EJECT.
   - If the cassette will not eject, check to see if "TIMER" is displayed on the message display panel. If it is, press the TIMER button to turn it off.

### NOTES:

- Be sure to insert the cassette firmly into the slot; otherwise it will be automatically ejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.

### WARNING

- Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
- Do not try to pull out a cassette once automatic loading has started.



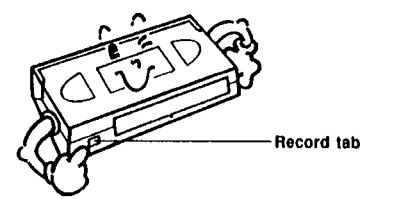
### Usable Cassettes And Their Recording Times

This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS video signals only. It is not possible to play back a recorded Super VHS tape.

| Type of Cassette | Recording/Playback Time |
|---|---|
| E-30 | 30 minutes |
| E-60 | 1 hour |
| E-90 | 1 hour, 30 minutes |
| E-120 | 2 hours |
| E-180 | 3 hours |
| E-240 | 4 hours |

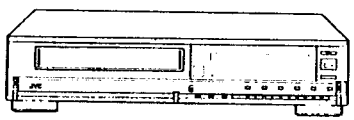
### Accidental Erasure Prevention

To prevent accidental recording on a recorded cassette, remove its record tab. To record on it later, cover the hole with adhesive tape.

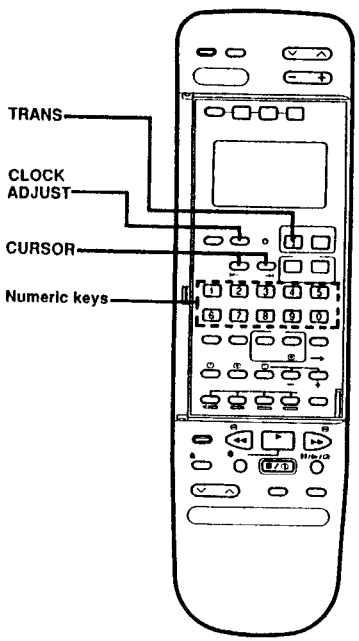


# Setting The Clock

Since your video recorder bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results. And, since the remote control's LCD clock and the recorder's clock must be set to the same time, this chapter describes the most convenient way of setting both clocks -- setting the LCD clock and transferring its contents to the recorder's clock.

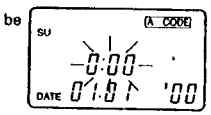


PLUG IN RECORDER



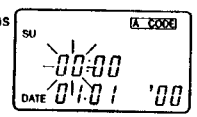

## A LOAD BATTERIES (☞p.4 )

1 Check the LCD.
- The time display section (0:00) will be blinking.



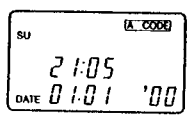

## B START CLOCK SETTING

2 Press CLOCK ADJUST.
- Blinking digits will prompt you to items that can be set.



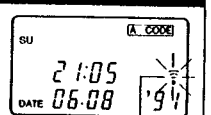

## C INPUT THE TIME

3 Press the appropriate numeric keys.
- Example: For 21:05, press 2 1 0 5. Always enter "0" before single-digit entries.




## D INPUT THE DAY/MONTH/YEAR

4 Press the appropriate numeric keys.
- Example: For 6th August, 1991, press 0 6 0 8 9 1. Always enter "0" before single-digit entries.
- After setting the year, the transfer-ready mark will appear and blink.




Transfer-ready mark

## E TRANSFER AND START THE CLOCK

5 Press TRANS.
- The day of the week will automatically appear.
- The remote control's clock will start. At the same time, the set data will be transferred to the recorder.

## TO MAKE CORRECTIONS

Press either CURSOR button so that the item you want to change blinks.

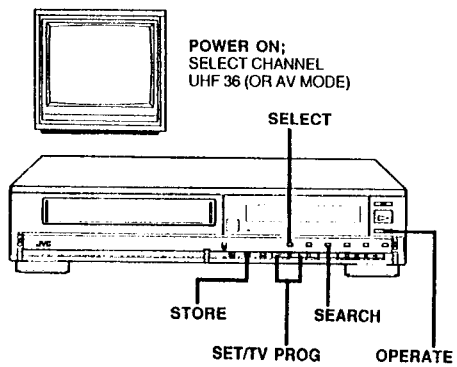
**NOTE:**

If you wish to set the recorder's clock directly *referring to the message display, ☞p.25. For quick* "summer time" (Daylight Saving Time) adjustment, ☞ p.25.



# Setting The Tuner

The procedure introduced here lets you assign receivable channels in your area to channel positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROGRAM ∨/∧ button. During channel scanning, empty tuner channel positions will be skipped so you won't have to go through any "blank" channels to get to the one you want.

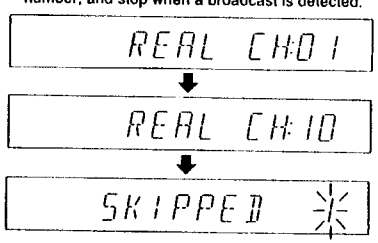



## A TURN ON THE RECORDER

1 Press OPERATE.

## B SEARCH FOR RECEIVABLE CHANNELS

2 Press SEARCH.
- Automatic scanning will start at the lowest channel number, and stop when a broadcast is detected.

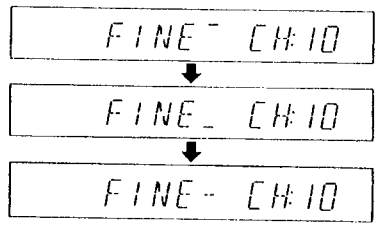



- Regular channels (CH) are scanned first, then cable channels (CC).

## C FINE-TUNE THE CHANNEL

- Check the picture on the TV screen, and fine-tune it if necessary. When the picture is clear, proceed to Step D.

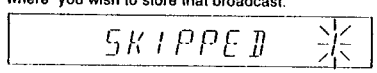
3 Press SELECT.
4 Press SET (+ or –) so that the "–" sign appears at the centre.




5 Press SELECT.

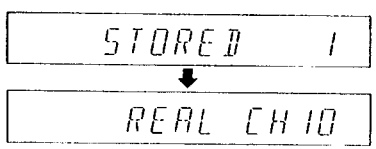
## D SELECT A TUNER POSITION

6 Press TV PROG to select the tuner channel position where you wish to store that broadcast.




## E STORE THE CHANNEL

7 Press STORE.




- This message indicates that VHF channel 10 has been stored into the tuner's channel position 1.

## F CONTINUE

8 Repeat steps 2 through 7 for other receivable channels.

## TO CHANGE PRESET CHANNELS

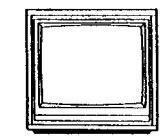
- If you have already preset some channels, do not use the automatic Channel Search function to change or add channels. ☞ p.26.

**Notes:**

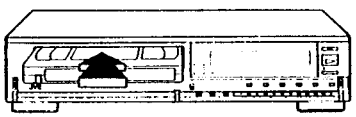
- If you don't want to store the broadcast detected in Step B, simply press SEARCH to continue automatic scanning. Search will stop as soon as another broadcast is detected.
- Be sure to proceed to the next step within 10 seconds, otherwise Channel Search will be cancelled automatically. If this happens and you wish to continue channel setting, press SEARCH again. Channel scanning will resume, beginning with the next receivable channel.

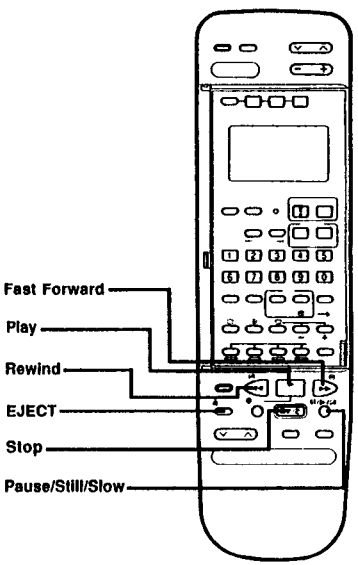
# Playback

The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.



POWER ON;
SELECT CHANNEL
UHF 36 (OR AV MODE)






## A TURN ON THE RECORDER

1 Insert a cassette.
- The recorder power will come on automatically.
- If the record tab on the cassette is removed, playback will start automatically.

## B TO START PLAYBACK

2 Press ► (Play).

## C TO STOP PLAYBACK

3 Press ■ (Stop).

## D TO REWIND OR FAST-FORWARD

1 Press ◄◄ (Rewind) to rewind the tape.
2 Press ►► (Fast Forward) to fast-forward the tape.
- Press ■ (Stop) to stop rewind or fast-forward.

## E TO EJECT THE TAPE

3 Press EJECT.

### High-Speed Forward And Reverse Search

**During Playback:**

1 Press ►► (Fast Forward) for high-speed forward search.
2 Press ◄◄ (Rewind) for high-speed reverse search.
3 Press ► (Play) to resume normal playback.
- For short searches, keep ►► (Fast Forward) or ◄◄ (Rewind) pressed for more than 2 seconds. When released, normal playback will continue.

### Still Playback And Frame Advance

**During Playback:**

1 Press II/I► (Pause/Still/Slow) to view a still picture.
2 Press again to advance the picture frame by frame.
3 Press ► (Play) to resume normal playback.

### Slow Motion

**During Playback:**

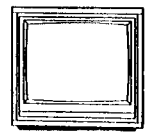
1 Press II/I► (Pause/Still/Slow) for 2 seconds.
2 Press again to stop the picture.
3 Press ► (Play) to resume normal playback.

### NOTES:

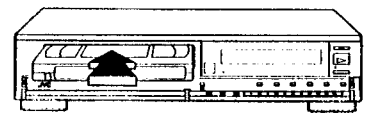
- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable (vertical jitter) use the recorder's V. LOCK buttons to correct the picture.
- During search playback, some noise bars will appear.
- If noise bars appear during playback, correct using manual tracking. ☞ p.16.
- There is no audio during search, still, frame-by-frame, or slow motion playback.
- The recorder automatically rewinds when the end of the tape is reached.

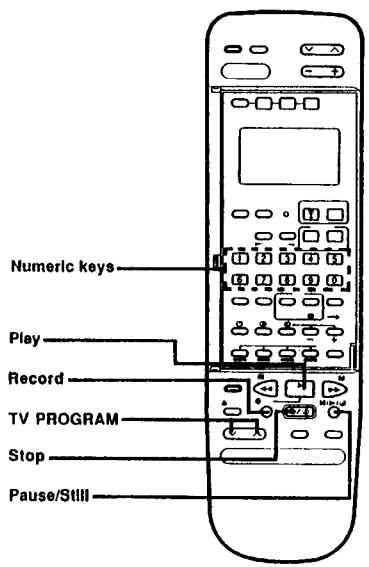
# Recording

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. This is realtime video recording.



POWER ON;
SELECT CHANNEL
UHF 36 (OR AV MODE)






## A TURN ON THE RECORDER

1 Insert a cassette with the record tab in place.
- The recorder power will come on automatically.

## B CHOOSE A PROGRAMME

2 Press TV PROGRAM or the numeric keys to select the channel you wish to record.

## C TO START RECORDING

3 Press ● REC (Record) and ► (Play) simultaneously.

## D TO PAUSE RECORDING

1 Press II/I► (Pause/Still).
2 Press ► (Play) to resume recording.

## E TO STOP RECORDING

3 Press ■ (Stop).

### To Watch Another Programme While Recording

**During Record:**

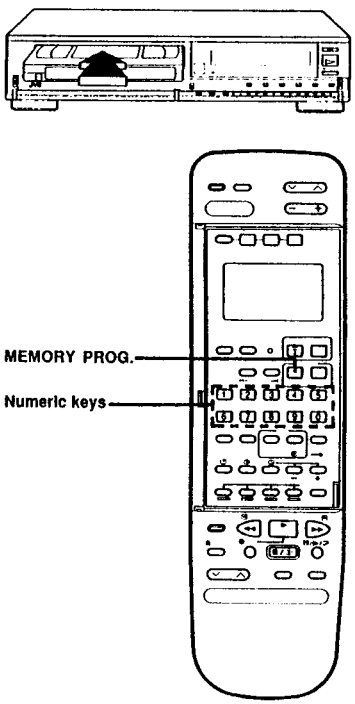
1 Use the channel controls on the TV to select the other channel you wish to view.
- The programme selected with the TV channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

### NOTES:

- To start recording with the recorder's REC/ITR button, press it once on its own. Pressing REC/ITR more than once activates the Off-Timer. ☞ p.17.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's record tab has been removed.
- When a VPS programme is being broadcast on the selected channel, "VPS" appears on the display panel. ☞ p.22 for information on VPS.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.

# Timer-Recording

The LCD timer programming method introduced here is one of the two possible with your video recorder, and may be the one you will find most convenient. The programmed data is held in memory even after it has been transferred to the recorder. If you prefer to use the recorder's controls and message display panel, ☞ p.19. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.

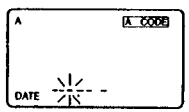



## A TURN ON THE RECORDER

1 Insert a cassette with the record tab in place.
- The recorder power will come on automatically.

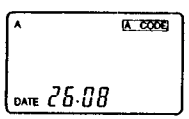
## B ACCESS THE LCD TIMER PROGRAM

2 Press MEMORY PROG. (Program A)
- Four programs (A, B, C, and D) are available. To select another program, press MEMORY PROG.



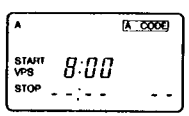

## C INPUT THE DATE

3 Press the appropriate numeric keys.
- Example: For 26th August, press 2 6 0 8.



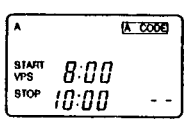

## D INPUT THE START TIME

4 Press the appropriate numeric keys.
- Example: For 8:00, press 0 8 0 0.

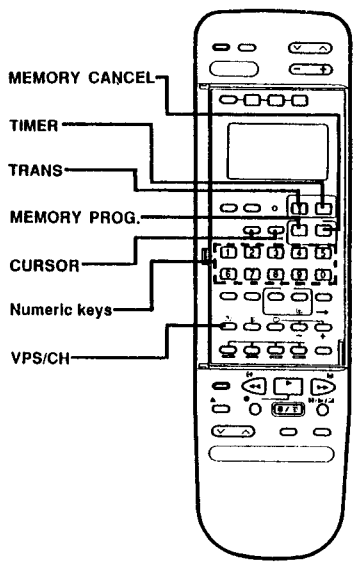



## E INPUT THE STOP TIME

5 Press the appropriate numeric keys.
- Example: For 10:00, press 1 0 0 0.

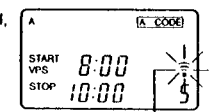





## F INPUT THE CHANNEL NUMBER

6 Press the appropriate numeric keys.
- Example: For channel 5, press 5.
- After the channel has been entered, the transfer-ready mark will appear and blink.
- Normally, you should leave "VPS" on so you can take advantage of VPS recording*. You can cancel VPS by pressing the VPS/CH button whenever the memory program is open. If you have any questions about VPS, ☞p.22.




## G TRANSFER THE DATA TO THE RECORDER

7 Press TRANS with the remote control directed to the recorder's Remote Sensor window.
- You will see "PROGRAM 1" on the display panel, telling you that the data has been successfully transferred to the recorder's Program 1 memory.

## H SET TO TIMER MODE

8 Press TIMER.
- The recorder will enter the timer mode and power will go off.
- Press TIMER again to release the timer mode.

### Variations in Step C (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- First press numeric key "9" (REPEAT) and then enter the date.

### Variations in Step C (Daily Program)

This function lets you set the recorder to timer-record at the same time every day. Use it to record daily serials.
- To record a daily serial starting on the day of setting, press numeric key "8" (DAILY) and then press CURSOR → until the display changes to time input mode.
- To record a daily serial starting on a certain day, press numeric key "8" (DAILY) and then enter the date.

**TO MAKE CORRECTIONS**

- Press either CURSOR button so that the item you want to change blinks, and enter new data.

**TO CANCEL PRESET PROGRAMS**

1 Press MEMORY PROG. to call up the program you wish to cancel (A – D).
2 Press MEMORY CANCEL.

**For other timer programming methods, ☞ p.19.**
**Any questions? ☞ p.21.**

* VPS adapter is required with "E" version.

# MODE Mode Displays — What They Mean

### Message Display Panel

The operation mode is displayed on the recorder's display panel automatically. Displayed messages are designed to be self-explanatory. Here are some of the more common displays:

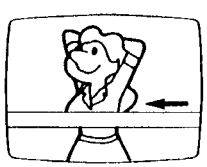
| DISPLAY | MODE | DISPLAY | MODE |
|---|---|---|---|
| PLAY | Play | PAUSE (with channel number) | Record-Pause |
| STILL | Still | FWD SEARCH | Forward Search |
| FF | Fast-Forward | REV SEARCH | Reverse Search |
| REW | Rewind | FWD SLOW | Forward Slow |
| REC (with channel number) | Record | EJECT | Eject |
| TIMER REC | Timer-Recording | STOP | Stop |

**For a more comprehensive list, ☞ p.28.**

### On-Screen Display

The record-pause mode is also displayed on the TV screen in the form of a white horizontal bar.

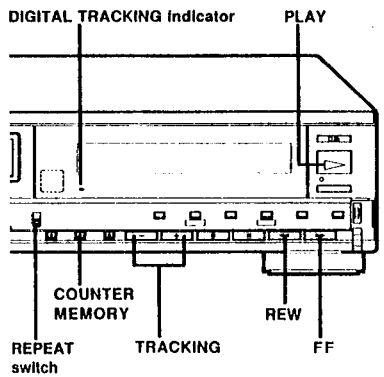
- The bar reduces in size to let you know how long the record-pause mode has continued.
- The record-pause mode is automatically released after about 5 minutes.

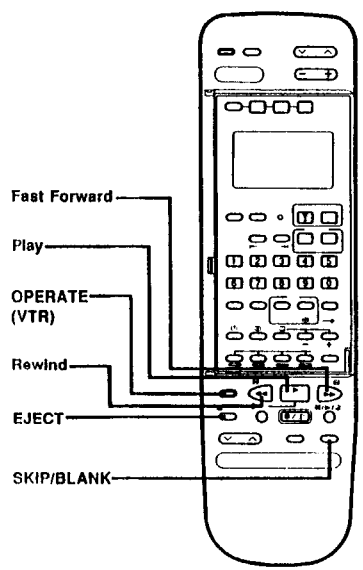




# For Playback

Take advantage of special functions possible with the recorder's controls or the remote control.




**NOTE:**
When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

### Repeat Playback (Recorder)

Your video recorder can automatically play back the whole tape or an index-marked portion 5 times repeatedly.

1. Set the REPEAT switch to FULL or INDEX.
2. For Index Repeat playback, locate the index code at which you wish to start playback. (Index Search, ☞p.18.)
3. Press PLAY. Repeated playback will start. After repeating 5 times consecutively, playback will stop.
   - Be sure to reset the REPEAT switch to OFF before pressing the PLAY button again; otherwise repeat playback will resume.

### Manual Tracking (Recorder)

Your video recorder is equipped with automatic tracking control; the DIGITAL TRACKING indicator lights or blinks when automatic tracking is on. If you wish to adjust tracking manually during playback:

1. Press TRACKING (+ and –) simultaneously for manual override.
   - The DIGITAL TRACKING indicator will go out.
2. Press TRACKING (– or +) to adjust tracking when required.
3. Press TRACKING (+ and –) simultaneously to return to automatic tracking.

To adjust tracking during slow motion, simply press TRACKING (– or +) to obtain the best picture.

### Memory Play (Recorder and Remote Control)

For automatic start of playback after tape is rewound:

1. Press REW.
2. Press PLAY within 2 seconds.

For automatic power off after tape is rewound:

1. Press REW.
2. Press OPERATE (VTR) within 2 seconds.

### Memory Play (Recorder)

For automatic start of playback beginning at counter position "0:00:00":

1. Press COUNTER MEMORY.
2. Press REW (or FF).
3. Press PLAY within 2 seconds.

### Memory Eject (Remote Control)

For automatic tape eject after tape is rewound:

1. Press ◄◄ (Rewind).
2. Press EJECT within 2 seconds.

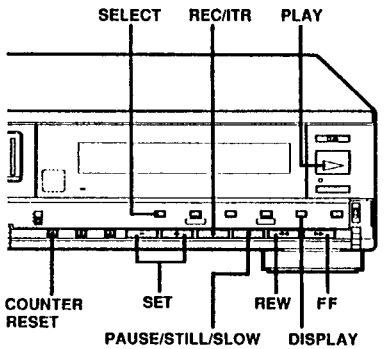
### Skip Search (Remote Control)

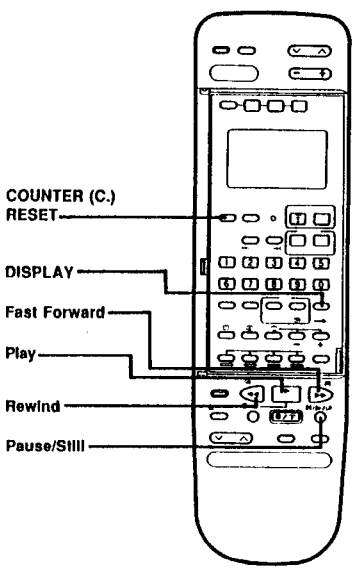
Your recorder offers a simple way of skipping over unwanted sections of recorded TV programmes.

**During Playback:**

1. Press SKIP/BLANK from 1 to 4 times.
   This fast-motions through 30-sec. to 2-min. of tape.
   - Playback resumes automatically.
   - Press ► (Play) to cancel a Skip Search midway.

# For Recording




**NOTES:**

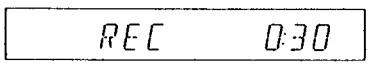
- With Retake, rainbow noise may occur in the rewound and re-recorded section.
- The indicated remaining time is only approximate.

## Instant Timer Recording (Off Timer) (Recorder)

You can start a recording and then set the recorder to shut off automatically after a set duration.

**During Record:**

[1] Press REC/ITR (on the recorder). A "REC 0:30" indication appears, advising that power will switch off after 30 minutes.




[2] Press REC/ITR again to delay the off-time by 30-minute increments (up to 4 hours).
- For a more precise setting, use the SELECT/SET buttons to set the exact time required (possible up to 4 hours and 59 minutes).

## Retake (Recorder and Remote Control)

You can cut out unwanted parts of a TV programme while you're recording it.

**During Record:**

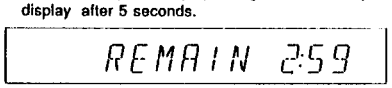
[1] Press PAUSE/STILL/SLOW.
[2] Press FF or REW for normal-speed search in the corresponding direction.
- Release to return to Record-Pause mode.

[3] Press PLAY when you wish to resume recording.

## Remaining Tape Time Indication (Recorder and Remote Control)

When you need to know the tape's remaining time.

[1] Press DISPLAY until "REMAIN" appears. Approximate remaining tape time is displayed.
- The remaining time display changes back to the previous mode display after 5 seconds.




## Elapsed Recording Time Indication (Recorder and Remote Control)

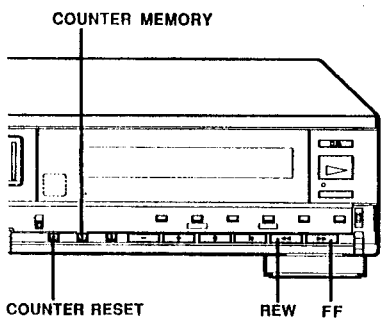
When you need to know the exact time of a recording.

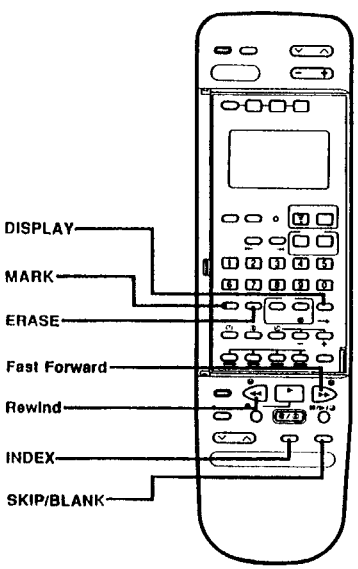
[1] Press DISPLAY until a counter reading appears.
[2] Press COUNTER RESET and then start recording.
- The counter will be reset to "0:00:00", and the display will be replaced by the Record mode display after 5 seconds.

[3] Press DISPLAY when you want to know the elapsed recording time.



# For Tape Access




**NOTES:**

- Index codes cannot be marked or erased if the cassette's record tab is removed. ☞ p.8.
- Press ► (Play) or ■ (Stop) to cancel Index Search or Blank Search.
- If the end of the tape is reached during Index Search or Blank Search, the mode is cancelled and the tape is rewound to the beginning.
- When a fully recorded tape is used for re-recording new material, Blank Search can be used to detect the end of the new material.

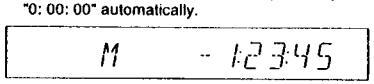
## Counter Memory (Recorder)

**During Play or Stop:**

[1] Press COUNTER RESET (with a counter reading on the display) at a point you wish to locate later.
- The counter will read "0: 00: 00".

[2] Press COUNTER MEMORY.
- "M" will appear in front of the counter digits.

[3] Press REW (or FF) when you wish to return to that point.
- The tape will rewind (or fast forward) and stop at about "0: 00: 00" automatically.




[4] To cancel the Counter Memory mode, press COUNTER MEMORY.

## Index Search (Remote Control)

This function gives you quick access to any one of 9 index codes in either direction. Your recorder automatically marks index codes at the beginning of each recording. You can manually mark and erase index codes as well.

**During Playback or Stop:**

[1] Press INDEX. "INDX 1" will be displayed.
- If you wish to access index codes 2 through 9, press INDEX repeatedly until the correct index number is displayed.

[2] Press ►► (Fast Forward) or ◄◄ (Rewind). Index Search will start in the corresponding direction.

## Manual Index Mark/Erase (Remote Control)

**TO MARK**

**During Playback or Record:**

[1] Press MARK. The recorder will mark an index code at that location.

**TO ERASE**

**During Playback or Still:**

[1] Press ERASE. The recorder will fast-forward to the nearest index code and delete it.

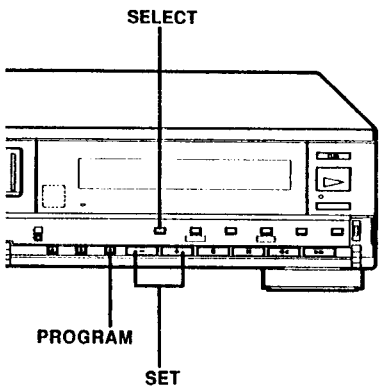
## Blank Search (Remote Control)

This function lets you quickly locate the blank portion of a partially recorded tape.

**During Stop:**

[1] Press SKIP/BLANK.
- The recorder automatically fast-forwards or rewinds to the end of the recorded portion of tape, and stops.
- The tape's remaining time is automatically displayed. Press DISPLAY to return to the realtime counter display.

# For Timer Recording




## Things You Should Know

Timer-recording is one of the most useful functions of your video recorder, and, if you don't understand it, it can be one of the most complicated too. This chapter describes the method of programming the timer directly with the recorder's controls, and how the message display helps you in timer recording. Please read the following to get a clear idea about why things work the way they work, and what you should do when things don't work as expected.

## Direct Timer Programming

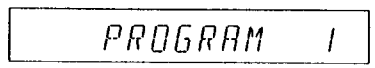
The built-in 1-year/8-event programmable timer can be set directly at the recorder, referring to the message display panel. Make sure that the message display panel shows the correct current time.

### A TURN ON THE RECORDER

1 Insert a cassette with the record tab in place.
- The recorder power will come on automatically.

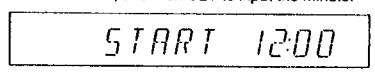
### B ACCESS THE TIMER PROGRAM

2 Press PROGRAM.
- You are ready to input data into Program No. 1.
- To change the program number, press SET.



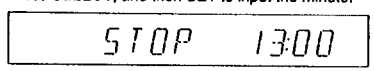

### C INPUT THE START TIME

3 Press SELECT, and then SET to input the hour.
4 Press SELECT, and then SET to input the minute.



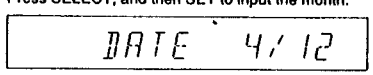

### D INPUT THE STOP TIME

5 Press SELECT, and then SET to input the hour.
6 Press SELECT, and then SET to input the minute.

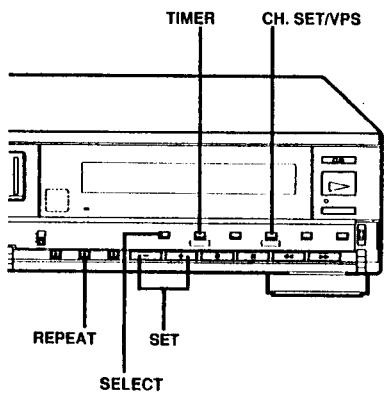



### E INPUT THE DATE

7 Press SELECT, and then SET to input the day.
8 Press SELECT, and then SET to input the month.

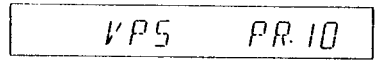





### F INPUT THE CHANNEL NUMBER

9 Press SELECT, and then SET to input the channel.




- Normally, you should leave "VPS" on so you can take advantage of VPS recording*. You can cancel VPS by pressing the CH.SET/VPS button whenever the memory program is open. If you have any questions about VPS, ☞p.22.

### G END ONE PROGRAM

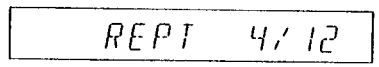
10 Press SELECT.
- The current program number will appear and blink.
- To make corrections, advance with SELECT to the item you wish to change and input new data with SET.
- If you need to set another program, press SET and repeat steps 3 through 10.

### H SET TO TIMER MODE

11 Press TIMER.
- The recorder will enter the timer mode and power will go off.
- Press TIMER again to release the timer mode.

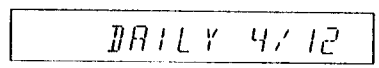
## Variations in Step E (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- First press REPEAT and then enter the date.




## Variations in Step E (Daily Program)

This function lets you set the recorder to timer-record at the same time everyday. Use it to record daily serials.
- To record a daily serial starting on the day of setting, press REPEAT twice and then press SELECT until the display changes to channel setting mode.
- To record a daily serial starting on a certain day, press REPEAT twice and then enter the date.




**NOTE:**
The REPEAT button rotates the date set mode among DATE, REPT, and DAILY.

*VPS adapter is reqired on "E" version.

# For Timer-Recording (cont'd)

## Error Messages

The following error messages may appear on the message panel when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

NO CASS

- Displayed for 5 seconds and the Timer Standby mode is cancelled.

***WHY:*** There is no cassette in the recorder.
***WHAT TO DO:*** Insert a cassette. Press TIMER again.

NO REC TAB

- Displayed for 5 seconds. The Timer Standby mode is cancelled.

***WHY:*** The inserted cassette has its record tab removed.
***WHAT TO DO:*** Eject that cassette. Insert a cassette with its record tab intact. Or cover the record tab hole of the cassette with adhesive tape and re-insert it. Press TIMER again. ☞p.8.

NO-PROGRAM

- Displayed for 5 seconds. The Timer Standby mode is cancelled.

***WHY:*** There are no preset programs in memory.
***WHAT TO DO:*** Check the programmed data and re-program it as necessary. Press TIMER again.

## Other Messages

The following messages may also be encountered during timer-recording.

TIMER (with current hour)

***WHY:*** The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

TIMER REC

***WHY:*** Normal display while timer-recording is in progress.

TAPE END

***WHY:*** If this and "TIMER REC" are alternately displayed, it means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

SET CLOCK

***WHY:*** This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
***WHAT TO DO:*** Set the clock. ☞p.9.

- If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

The following messages may be encountered when the TRANS button of the remote control is pressed. ☞p.14.

PROGRAM (with number)

- Displayed for 2 seconds.

***WHY:*** The transferred data has been stored in that program number. (The smallest vacant program number is always selected automatically.)

TRANS ERR

- Displayed for 5 seconds.

***WHY:*** Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set.
***WHAT TO DO:*** Check the LCD program, and re-program as necessary. Transfer the correct data.

PROG FULL

- Displayed for 5 seconds.

***WHY:*** All the recorder's timer programs (1 – 8) are preset.
***WHAT TO DO:*** Cancel unnecessary programs, and transfer again.

## On Checking And Cancelling Programs

Since executed programs are automatically cleared from memory (except those for daily and weekly serials), cases where the entire 8-event memory is full should be rare. If this should happen, check the preset programs and cancel one or more to make room for the new program(s) you wish to input.

**TO CANCEL A PROGRAM**

1. Press PROGRAM.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. Press CANCEL to erase the program from memory.
   - You can press CANCEL at any stage while the program is open. .
   - To erase another program, press SET when a blinking program number is displayed.

## NOTE:

PROGRAM and CANCEL buttons are also provided on the remote control (labelled VTR PROG. and VTR CANCEL). These operate the recorder directly. Do not confuse with the MEMORY PROG. and MEMORY CANCEL buttons which control the LCD timer programs.

## Some Facts On Timer Operation

- If the end of the tape is reached during timer-recording, the cassette is automatically ejected and recorder's power is switched off with "TIMER REC" and "TAPE END" flashing alternately on the message display panel.
- When timer-recording is successfully completed, the recorder's power is automatically switched off.
- Since the timer starts and stops recording based on the time being kept by the recorder's built-in clock, the clock's time must be accurate for correct timer-recording results.

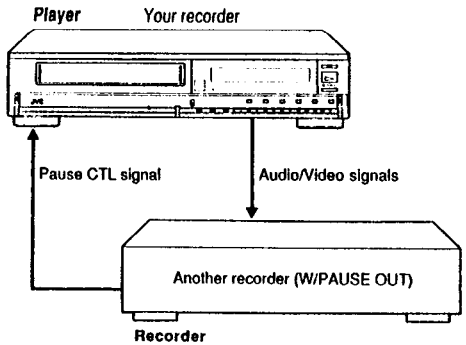
## VPS Recording

Now available from some TV stations, VPS (Video Program System) is a service designed to assure safe, accurate timer-recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed. If your video recorder is an "EG" model, it already incorporates a built-in VPS decoder. If your recorder is an "E" model and you want to take advantage of this service (if available), you must connect an optional adapter (☞ Specifications) to the VPS/VPV/VPT connector on the rear panel of your recorder.

## To Use VPS Service

- For each timer program, the initial setting is "VPS ON" and you will see "VPS" on the display panel together with a channel number. You do not have to cancel "VPS" even for non-VPS programmes, because those programmes will be recorded at the preset times.
- To cancel "VPS", press the VPS button. Pressing the VPS button alternates the setting, and "VPS ON" or "VPS OFF" is displayed for 2 seconds.
- When you open the LCD timer memory, the LCD display always shows "VPS". If your video recorder is an "E" version and you have not connected a VPS adapter, be sure to cancel "VPS" by pressing the VPS/CH button before transferring the memory data to the recorder.

# For Editing




## Editing To/From Another Recorder

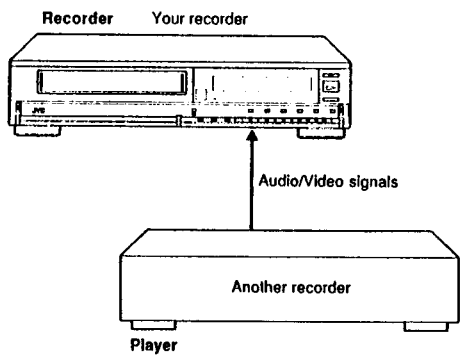
Your video recorder can be used as either the recording deck or the source player when editing tapes. When used as the source player in combination with another video deck which is preroll-capable and equipped with a Pause Control Output terminal, your recorder's PAUSE terminal can accept preroll commands for synchronized preroll editing.

**PREPARATION**

1. Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.

**OPERATION**

2. Set the recorder to external input mode (AUX).
   - Press numeric key "0", or press TV PROGRAM until "AUX INPUT" appears in the channel display section.
3. Put the player in the Play mode.
4. Put the recorder in the Record mode.

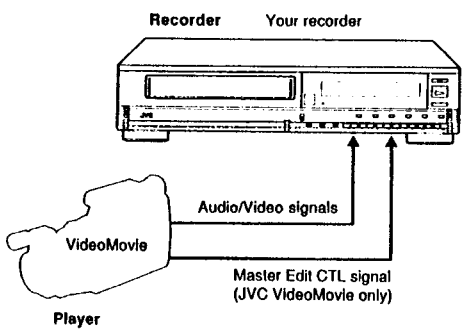



## Editing From A VideoMovie

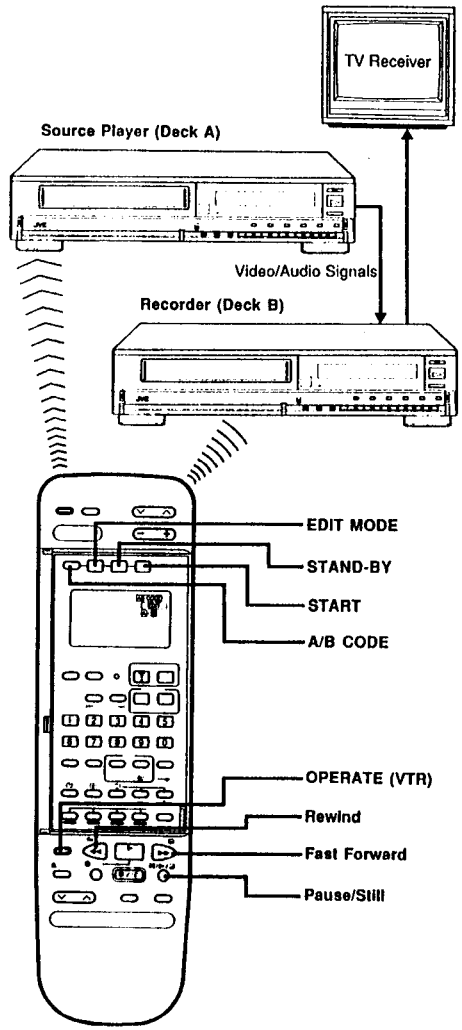
Tape-to-tape editing is also possible using a VideoMovie (equipped with playback facility) as the player and your recorder as the recording deck. In this case, the recorder's PAUSE terminal can be used to accept Master Edit Control commands from the VideoMovie.

**PREPARATION**

1. Connect the VideoMovie's AV OUT connector to the recorder's AUDIO/VIDEO connector.
2. Connect the AV output cable's mini-plug to the PAUSE terminal of the recorder.
   - If the VideoMovie is equipped with the Master Edit Control system, you can control the recorder using the VideoMovie's controls. See VideoMovie's instruction manual for operating procedures.
   - With this connection, you can also use the VideoMovie as a video camera for direct recording onto the recorder's tape. Put the recorder in Record-Pause and use the VideoMovie's start/stop trigger to start and pause recording. (For direct recording with a separate video camera, a camera adapter is necessary.)






**CAUTION:**
Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.

## Duet Editing

For those who have two JVC video recorders and are interested in editing, this function will simplify editing operations by delivering separate commands to two recorders simultaneously from a single remote control in the form of separate "A" and "B" control codes. (Designated JVC models only.)

**PREPARATION**

1. Connect two JVC recorders. (PAUSE connection not necessary.) ☞p.23.
2. Set one recorder to respond to A code signals (deck A), and the other to respond to B code signals (deck B). ☞"A/B Code Switching"
3. Place the two decks side by side.
4. Load a recorded tape into deck A, and a blank tape into deck B.

**OPERATION**

5. Press the EDIT MODE button. ("EDIT" and "A → B" will appear on the LCD.)
   - If you are using deck B as player, and deck A as recorder, press the A/B CODE button. "A → B" will be replaced with "B → A".
6. Press STAND-BY. Deck A enters Still mode, deck B enters Record-Pause mode.
7. Search for a scene you want to edit from deck A to deck B (only the tape in deck A will move) and press II/I► (Pause/Still).
8. Press START. Deck A enters Play mode, B enters Record mode.
9. Press II/I►. Deck A enters Still mode, B enters Record-Pause mode.
   - Repeat steps 7, 8, and 9 to continue editing.
10. Press EDIT MODE to cancel the Duet Edit mode.

## A/B Code Switching

The remote control is preset to send A code signals (indicated by "A CODE" on the LCD) because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1. Unplug the recorder's power cord from the AC outlet.
2. Press the A/B CODE button. ("B CODE" will appear on the LCD.)
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE (VTR) button. The recorder will now only respond to B code signals.

## NOTE:

You can operate two recorders (A and B) independently from your remote control. Except in the Duet Edit mode, it will send either A or B code signals only, selected with the A/B CODE button.

# Special Operations

## Setting The Recorder's Clock Directly

To set the recorder's clock, all you have to do is transfer the LCD clock data again (☞p.9). If you prefer to set or adjust the recorder's clock directly at the recorder, read on.

1. Press PROGRAM/CLOCK ADJ.
   - If you are only adjusting the time, the Timer Program mode will be engaged first. So press PROGRAM/CLOCK ADJ. again.
2. Press SET (+ or –) to input the hour.
3. Press SELECT, and then SET (+ or –) to input the minute.
   - If you are only adjusting the time, skip steps 4 – 6.
4. Press SELECT, then SET to input the day.
5. Press SELECT, then SET to input the month.
6. Press SELECT, then SET to input the year.
7. Press PROGRAM/CLOCK ADJ.

### NOTES:

- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.
- If the year digits are automatically cleared when the PROGRAM/CLOCK ADJ. button is pressed in step 7, it is possible that you have input 29th February for a non-leap year. The day digits will blink. Input again.

## Setting The Clock Forward Or Backward By One Hour (Daylight Saving Time Adjustment)

This adjustment can be done independently for the LCD clock and the recorder's clock.

**TO ADVANCE THE TIME BY ONE HOUR**

- Press SUMMER TIME ADJ. (ADJUST) and quickly release.

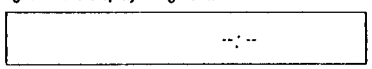
**TO SET THE TIME BACK BY ONE HOUR**

- Keep SUMMER TIME ADJ. (ADJUST) pressed for more than 2 seconds.

## Turning Off The Display

The fluorescent display on your JVC recorder can be switched off at any time.

1. Press the DISPLAY OFF button on the recorder. The lights in the display will go out.

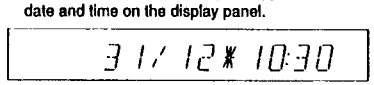



2. To restore the display, press the DISPLAY OFF button again.

## Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording or other interference, use the Child Lock function.

1. Press the remote control's OPERATE (VTR) button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (🔒) will appear between the date and time on the display panel.




2. Child Lock is automatically deactivated when you switch the recorder's power on again with the remote's OPERATE (VTR) button.
   - Pressing the TIMER button during timer-recording also deactivates the Child Lock mode.

### NOTES:

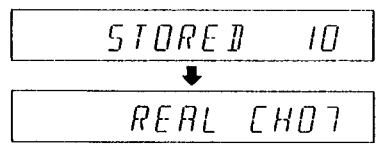
- While the Child Lock mode is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording has been performed, the Child Lock mode remains in effect.

## Changing Preset Channels

**TO CHECK STORED REAL CHANNELS**

This is possible both at the recorder and with the remote control. First turn on the recorder.

1. Press TV PROGRAM to select the channel position of the stored real channel whose number you want to know. (e.g. PR. 10)
2. Press CH SET.

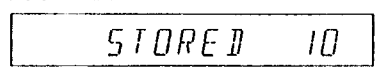



   - This indicates that channel position 10 stores real channel 7.
3. To check other channel positions, press TV PROGRAM.
   - Either "STORED xx" or "SKIPPED xx" will appear, followed by "REAL CH xx" or "REAL CC xx".
4. The Channel Set mode will be cancelled in about 10 seconds unless you call up another channel position: Do not press the CH SET button; this alternates between CH and CC bands.

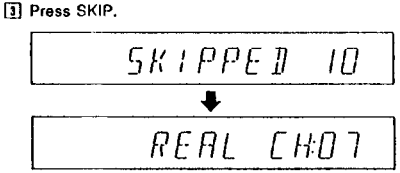
**TO DELETE STORED CHANNELS**

Use the recorder's controls. First turn on the recorder.

1. Press TV PROGRAM to select the channel position you want to skip. (e.g. PR. 10)
2. Press CH SET.




3. Press SKIP.

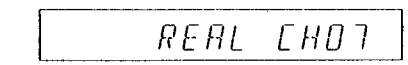



   - This indicates that real channel 7 has been deleted from channel position 10.

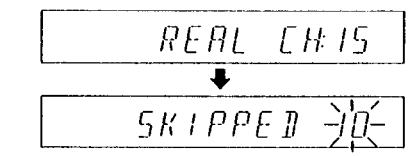
**TO STORE NEW CHANNELS**

Use the remote control since its 10 numeric keys can access real channels and channel positions directly. (Using the recorder's auto SEARCH button will clear all preset channels.) First turn on the recorder.

1. Press VPS/CH.




2. Press VPS/CH again and keep it pressed until the real channel number starts blinking.
3. Press VPS/CH to change the band between CH and CC, if necessary.
4. Press numeric keys to input the number of the real channel you want to store. (e.g. CH 15.)




5. Press numeric keys to input the number of a vacant channel position (e.g. 20), and hold the key for the 2nd entry until the display changes to "STORED 20".

   - The Channel Set mode will be cancelled automatically after about 10 seconds.

## ATTENTION

The "real channel" numbers displayed on the recorder may not correspond to channel designations in your area.

**ITALY**

| Display | CH | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Corresponding channel | | A | B | C | D | E | F | G | H | H1 | H2 |

**BELGIUM**

| Display | CC | 01 | 02 ..... 10 | 11 ..... 20 |
|---|---|---|---|---|
| Corresponding channels | | 80(M1) | 81(M2) ... 89(M10) | 90(U1) ... 99(U10) |

**SWITZERLAND**

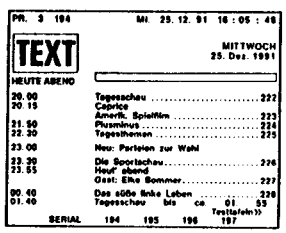
| Display | CC | 75 | 76 | 77 |
|---|---|---|---|---|
| Corresponding channel | | X | Y | Z |

# Using The Optional Teletext Adapter

Teletext services have established themselves as one of the most flexible sources of information and broadcast schedules available to TV and video users. Your video recorder is ready to take full advantage of these services. By connecting an optional teletext adapter (☞ Specifications), you'll not only be able to view the vast number of teletext pages now available, you'll be able to transfer broadcast schedule data directly to your recorder's timer for instant, automatic timer programming. You'll also be able to make full use of your remote control's capabilities, with all the dual or triple function controls working as intended. Here are just a few examples of features available to you when you connect an optional teletext adapter.

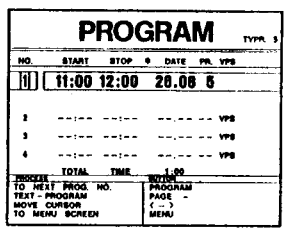
### TELETEXT

- View broadcast teletext pages.
- Several page access modes are available for quick, convenient location of pages you want to see.
- You can program the video recorder's timer directly using TV schedule pages.



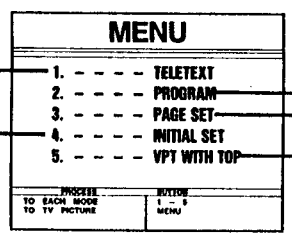

### PROGRAM

- Check timer recording data on the colour on-screen display.
- Program the timer manually with the remote's numeric keys.




### PAGE SET

- You can preset favourite or often-referred-to pages for immediate access.
- Up to four pages can be stored on each of the numeric keys, for a total of 40 pages.




### VPT WITH TOP

- TOP automatic teletext timer programming.
- Convenient colour-coded page access.

"5.- - - - VPT WITH TOP" only appears when the video recorder's tuner is tuned to a station transmitting TOP broadcasts. (Applicable only in certain areas.)

### INITIAL SET

**LANGUAGE**

- Select one of four languages (English, German, Italian, or Swedish) for on-screen messages.

**CLOCK ADJUST**

- Set the recorder's clock manually using the numeric keys.
- Set the recorder's clock automatically by reading teletext time information.

### ATTENTION

Some buttons on the remote control unit are labelled with pictograms indicating the functions that can be used when the VPT adapter is connected. When reading the VPT adapter's instruction manual, keep in mind the correspondence between these pictograms and the labels referred to in the instruction manual:

⊕ : LARGE/NORMAL
? : REVEAL
⊕ : HOLD
◪ : MIX
→ : ROTATE
⊕ : RESET



# Full List Of Display Panel Messages

| Displayed Message | When It Appears, What It Means |
|---|---|
| **During Clock Set** | |
| 12:59 | "12:59" is input for the time. |
| 30/11/91 | "30th November, 1991" is input for the date. |
| **During Program Set** | |
| PROGRAM 1 | "Program 1" has been opened/ set/cancelled/successfully transferred. |
| DATE 31/12 | "31st December" is input for the recording start date. |
| REPT 31/12 | "Repeat" command is input for recording of a weekly serial. |
| DAILY 31/12 | "Daily" command is input for recording of a daily serial. |
| START 11:00 | "11:00" is input for the recording start time. |
| STOP 12:30 | "12:30" is input for the recording stop time. |
| VPS PR. 10 | "10" is input as the channel to be recorded, with VPS ON. |
| VPS ON | "VPS" status is changed from OFF to ON. Displayed for 2 seconds. |
| VPS OFF | "VPS" status is changed from ON to OFF. Displayed for 2 seconds. |
| **During Channel Set** | |
| REAL CH 02 | "Real Channel 02 in CH band" is scanned. |
| REAL CC 02 | "Real Channel 02 in CC band" is scanned. |
| REAL CH :15 | "Real Channel 15 in CH band" is received, but not stored. |
| SKIPPED | Channel position "10" is currently called up, and ready for input. |
| STORED 10 | Received real channel has been stored in channel position "10". |
| FINE - CH 15 | "Fine tuning" is engaged for "Real Channel 15 in CH band" |
| **During Normal Operation** | |
| PLAY | Normal playback is in progress. |
| STOP | Stop mode has been engaged. Displayed for 2 seconds. |
| STILL | A still picture is being viewed. |
| FF | Fast-forwarding. |
| REW | Rewinding. |
| REC 10 | Recording "Channel 10". |
| REC AUX | Recording "External Input". |
| REC 1:30 | Recording with the Off Timer set to shut off in 1 hour 30 minutes. |
| PAUSE 10 | Recording is paused. |
| TIMER REC | Timer-recording is in progress. |
| FWD SLOW | Slow motion playback is in progress. |
| FWD SEARCH | Forward search is in progress. |
| REV SEARCH | Reverse search is in progress. |
| SKIP | Skip Search is in progress. |
| BLANK | Blank Search is in progress. |
| INDX + 9 | Searching for the 9th index code in the forward direction. |
| INDX – 4 | Searching for the 4th index code in the reverse direction. |
| INDX MARK | Index code is being marked. |
| INDX ERASE | Index code is being erased. |
| REPEAT | Repeat playback is in progress. |
| PR. 10 | Channel 10 is being received. |
| VPS PR.10 | A VPS programme is being received on channel 10. |
| AUX INPUT | Auxiliary input source is being received. |
| EJECT | Cassette is being ejected. |

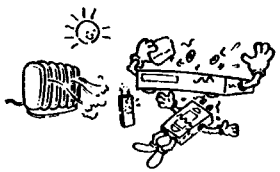
| Displayed Message | When It Appears, What It Means |
|---|---|
| **During Next Function Memory** | |
| REW – OFF | Will rewind to the beginning and then shut off automatically. |
| REW – PLAY | Will rewind to the beginning and then start playback automatically. |
| REW – TIMER | Will rewind to the beginning and then enter the timer mode automatically. |
| REW – EJECT | Will rewind to the beginning and then eject the tape automatically. |
| **Clock and Counter Displays** | |
| 4:30:15 | Tape counter reading of "4 hours, 30 minutes, 15 seconds". |
| M 4:30:15 | Same as above with Counter Memory ON. |
| REMAIN 2:24 | 2 hours and 24 minutes of recording time remaining on the tape. |
| 31/12 10:30 | It is 31st December, 10:30. (Standard date/time display when recorder power is turned off) |
| 31/12 10:30 | Same as above with Child Lock ON. |
| TIMER 10:30 | It is 10:30 and the Timer Standby mode is engaged. |
| SET CLOCK | The clock is not set. Please set it. |
| SET CLOCK | Same as above with Child Lock ON. |
| TIMER REC / TAPE END | End of tape was reached during timer-recording. |
| -:- | Display is turned OFF. |
| **Error Messages** | |
| NO CASS | There is no cassette in the recorder. |
| NO REC TAB | The cassette's record tab is removed. |
| NO-PROGRAM | No program has been preset. |
| TRANS ERR | Transfer is rejected due to wrong data. |
| PROG FULL | Transfer is rejected due to no vacant programs. |
| **Other Messages** | |
| GOOD MORNING / GOOD AFTERNOON / GOOD EVENING | Automatic greetings when the recorder is turned on. |
| GOOD-BYE GOOD NIGHT | Automatic greetings when the recorder is turned off. |

### NOTES:

This list represents the various types of messages your recorder is capable of generating. Actual messages displayed by your recorder (esp. if date, time, channel, tape counter reading, or other variables are involved) will differ slightly from those listed here.

# Precautions

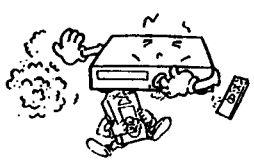
## Recorder, Remote Control, And Cassette Care



**Avoid extreme heat and direct sunlight**

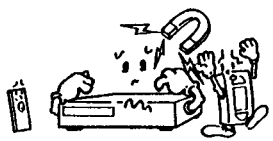
**Avoid extreme cold**

**Avoid extreme humidity**



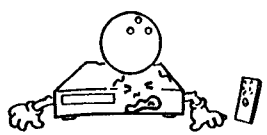
**Avoid dust**

***Avoid places subject to vibrations***



**Avoid strong magnetic fields**

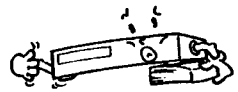
**Do not block the recorder's ventilation openings**



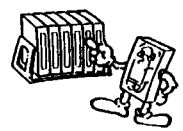
**Do not place anything heavy on the recorder or remote control**

**Do not place anything which might spill on top of the recorder or remote control**

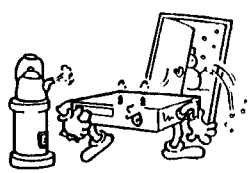
**Do not place the recorder on cushions, pillows, or thick carpeting**



**Use the recorder in a stable, horizontal position only**

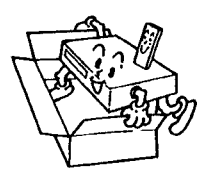


**Place cassettes in cassette cases and store vertically**



**Beware of moisture condensation**

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.



**When transporting**

- Be sure to remove cassette from recorder before packing
- Avoid violent shocks to the recorder during packing and transport



# Special Note On Head Cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.

# In Case Of Difficulties

## POWER AND TAPE TRANSPORT PROBLEMS

| Symptoms | Check points |
|---|---|
| No power is applied to the recorder. | • Is the power cord disconnected?<br>— Connect it. |
| Clock is functioning properly, but the recorder cannot be powered. | • Is "TIMER" displayed on the display panel?<br>— Press the TIMER button to extinguish the display. |
| Tape does not run during recording. | • Is "PAUSE" displayed on the display panel?<br>— Press the PLAY button to extinguish the display. |
| Tape stops during rewind or fast-forward. | • Is the COUNTER MEMORY button pressed?<br>— Press again to make "M" disappear from the display panel. |
| Tape will not rewind or fast-forward. | • Is the tape already fully rewound or fast-forwarded?<br>— Check the cassette. |

## RECORDING PROBLEMS

| Symptoms | Check points |
|---|---|
| Recording cannot be started. | • Is a cassette loaded?<br>• Is the record tab on the cassette removed?<br>— Reseal the slot with adhesive tape. |
| TV broadcasts cannot be recorded. | • Has "AUX" been selected?<br>— Set to the desired channel. |
| Tape-to-tape editing is not possible. | • Is the VideoMovie or another video recorder correctly connected?<br>• Are all necessary power switches turned ON?<br>• Has "AUX" been selected?<br>— Set to "AUX". |
| Camera recording is not possible. | • Is the VideoMovie correctly connected?<br>• Has "AUX" been selected?<br>— Set to "AUX". |
| Timer recording is not possible. | • Have you set the clock correctly and programmed the timer correctly?<br>— Check once again.<br>• Is "TIMER" displayed on the display panel?<br>— If not, press the TIMER button to display "TIMER". |

## PLAYBACK PROBLEMS

| Symptoms | Check points |
|---|---|
| Playback picture does not appear while the tape is running. | • If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel?<br>— Set it to the RF converter channel (UHF 36). (☞p.7)<br>• If you are using AV connection, is the TV receiver set to the AV mode?<br>— Set it to the AV mode. |
| Playback is repeated. | • Is the REPEAT switch set to either FULL or INDEX?<br>— Set it to OFF. |
| Noise appears during visual search. | • This is normal. |
| Noise appears during normal playback. | • Is the automatic tracking mode engaged?<br>— Try manual tracking. (☞p.16) |
| Noise appears during slow motion playback. | — Try manual tracking. (☞p.16) |
| Noise appears during still playback. | — Press Pause/Still a few times to remove the noise bars from the screen. |
| Playback picture is blurred or interrupted while TV broadcasts are clear. | • Video heads may be dirty.<br>— Head cloaning is necessary. Consult your JVC dealer. (☞p.30) |



## OTHERS

| Symptoms | Check points |
|---|---|
| Whistling or howling is heard from TV during camera recording. | • Move VideoMovie or camera's microphone away from TV or reduce TV sound volume. |
| Clock setting is not possible. | • Is "TIMER" displayed on the display panel?<br>— Press the TIMER button to extinguish the display. |
| Some channels are skipped over when scanning channels. | • Those channels are preset to be skipped over. If you need them, restore them. (☞p.26) |
| Channel cannot be switched. | • Is recording in progress?<br>— Press the PAUSE/STILL button, change the channel, and press the PLAY button. |
| Remote control does not function. | • Are the batteries discharged?<br>— Replace with new ones.<br>• Is the A/B CODE indicator showing the proper code for the recorder being operated?<br>— Press the A/B CODE button for the correct setting. |
| Index Search does not function properly. | • Adjacent index codes may be too close to each other.<br>— Erase some index codes and mark new ones if necessary, with sufficient distance between any two index codes. |

**ATTENTION:**

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

# SECTION 1
# DISASSEMBLY AND MECHANISM ADJUSTMENTS

## 1.1 DISASSEMBLY

### 1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 4 screws (A) and 1 screw (B). To remove the top cover, slide it in the direction of the arrow and lift it away.

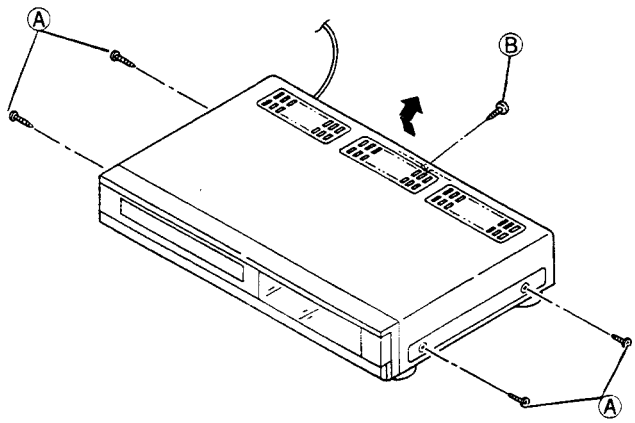



Fig. 1-1-1

### 1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs (C) of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs (D) of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

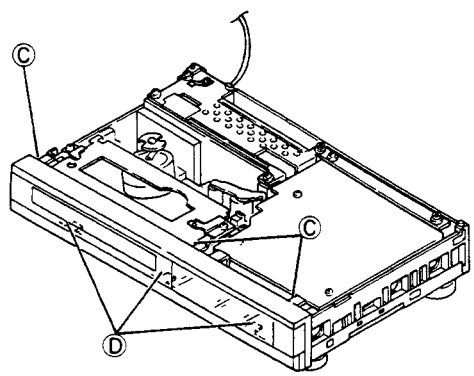



Fig. 1-1-2

### 1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 4 screws (E) and 1 screw (F) from the bottom of the chassis.
3. Disengage 4 claws (G) from the bottom of the chassis, and disengage the bottom cover from the bottom of chassis.

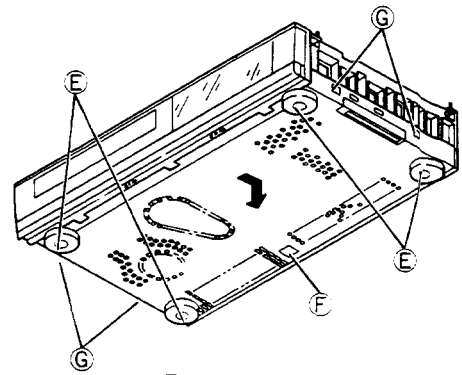



Fig. 1-1-3

### 1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 5 screws (H) from main board assembly.
3. Take out 1 screw (I) from terminal board, and remove the main board assembly in the upward direction.

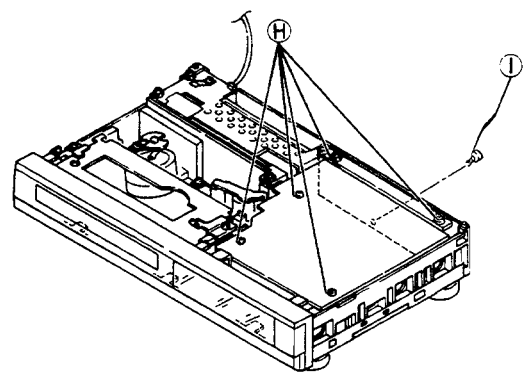



Fig. 1-1-4

### 1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
   Take out 4 screws (J) that secure the cassette housing. Disengage 3 tabs (K) of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
3. Remove the cassette housing in the upward direction.

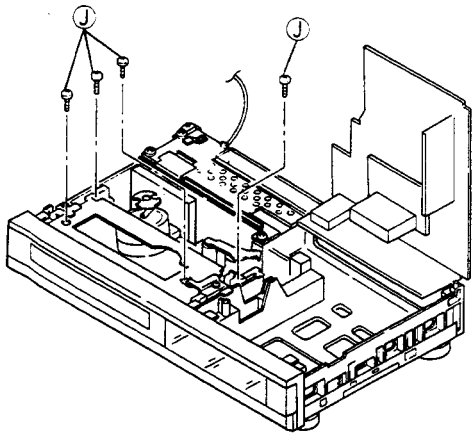



Fig. 1-1-5

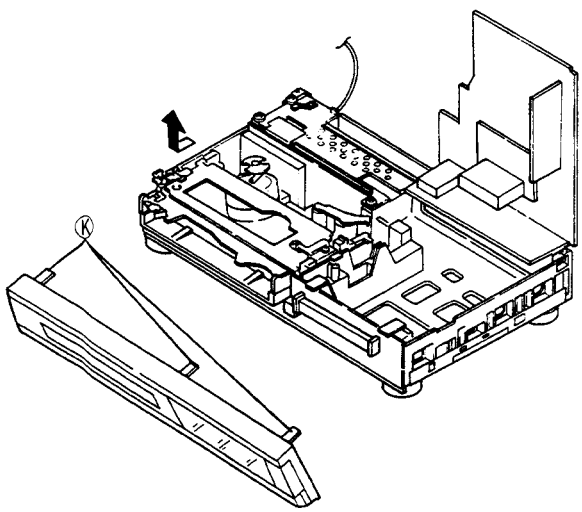



Fig. 1-1-6

### 1.1.6 Cassette housing installation

1. On the main deck, observe the positional relationships of the parts indicated in Fig. 1-1-7.
   If necessary, turn the loading motor by hand to obtain these positions.

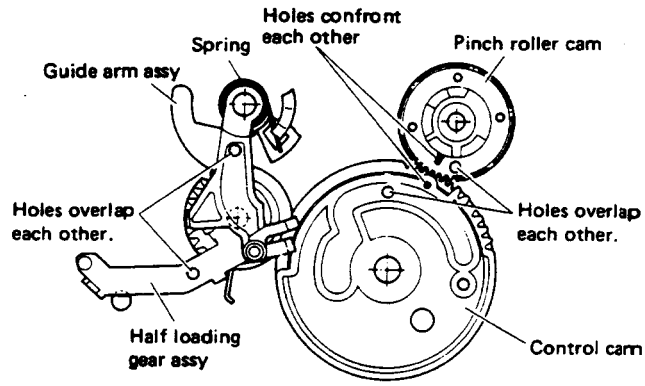



Fig. 1-1-7

2. Refer to Fig. 1-1-8 and confirm that the clutch is engaged.
   If necessary, press the lever indicated by the arrow to where the clutch is locked.

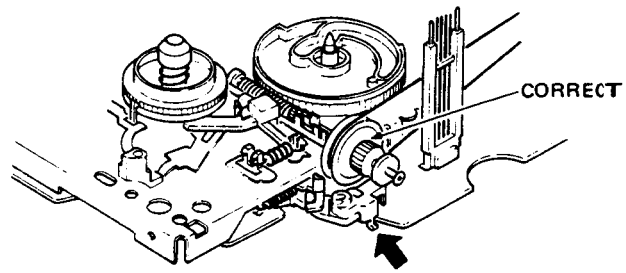



Fig. 1-1-8

3. Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position).
   Set the cassette housing into place and secure with 4 screws.
4. Install the front panel as shown in Fig. 1-1-9 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

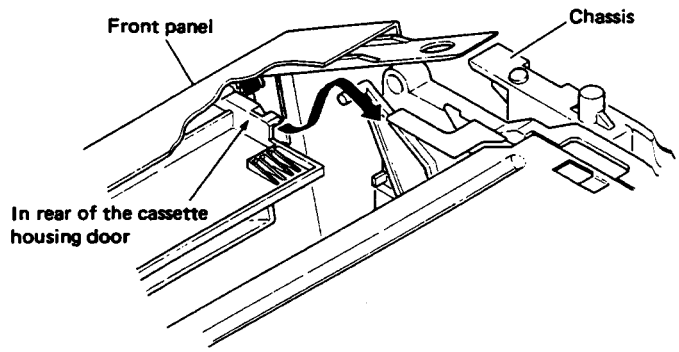
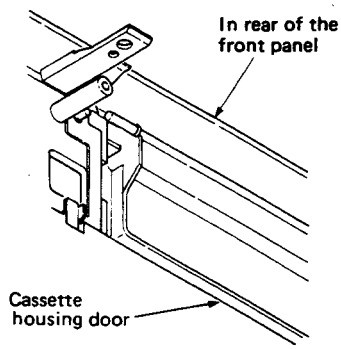



Fig. 1-1-9

5. Disconnect VCR from power, then reinstall the main board assembly and top cover.

### 1.1.7 Cassette housing door

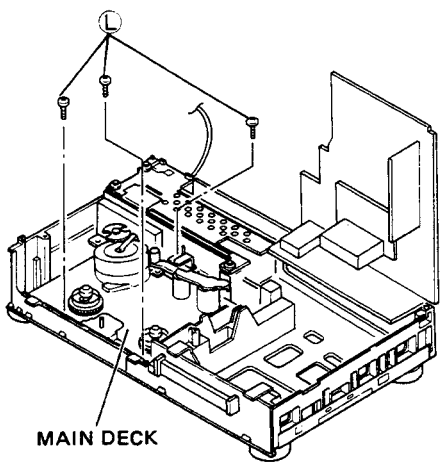
1. Remove the top cover and front panel assembly.
2. Refer to Fig. 1-1-10, with a lift of cassette housing door by hand, bend center of the cassette housing door toward you, then pull out the left end from the cassette housing.
3. Refer to Fig. 1-1-10 and use care regarding the torsion spring, then pull out the right end of the cassette housing door to move it.




Fgi. 1-1-10

### 1.1.8 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-11 and take out 3 screws Ⓛ from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector CN1 from the DECK TERMINAL board, connectors CN1, CN2 from the Pre/Rec board, connector CN1 from the A/C head board, connector CN1 from the Loading MDA board and connector CN1 from the Drum MDA board.




### 1.1.9 Switching regulator board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-12 and take out 4 screws Ⓜ from the switching regulator board assembly.
3. Remove the switching regulator board assembly in the upward direction.

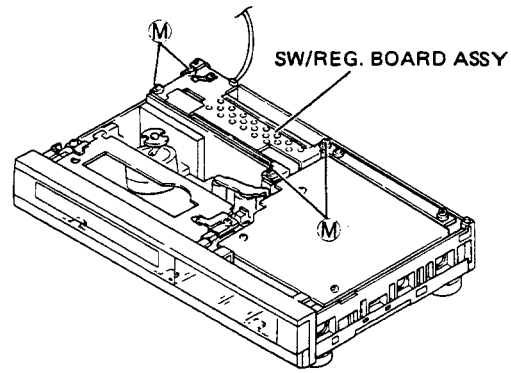



Fig. 1-1-12

## 1.2 MECHANISM ADJUSTMENTS

### 1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

### 1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of Main board connector CN601.
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

### 1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly (capstan motot) at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

### 1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tape : MH-2
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning tool : PUJ47351-2
   Shifts the head base for adjusting the control head position.
5. Roller driver : PTU94002
   Turns the guide roller for adjusting FM linearity.

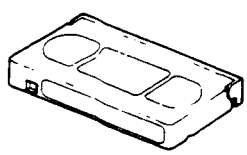
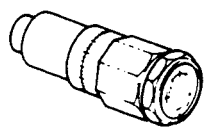
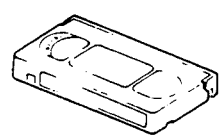
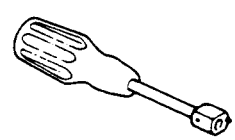
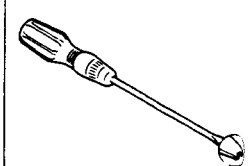
| Alignment tapes<br>1 | Torque gauge<br>2 | Back tension cassette gauge<br>3 | A/C head positioning tool<br>4 | Roller driver<br>5 |
|---|---|---|---|---|
|  |  |  |  |  |

**Fig. 1-2-4** Test equipment

## 1.3 MAIN MECHANISM PARTS

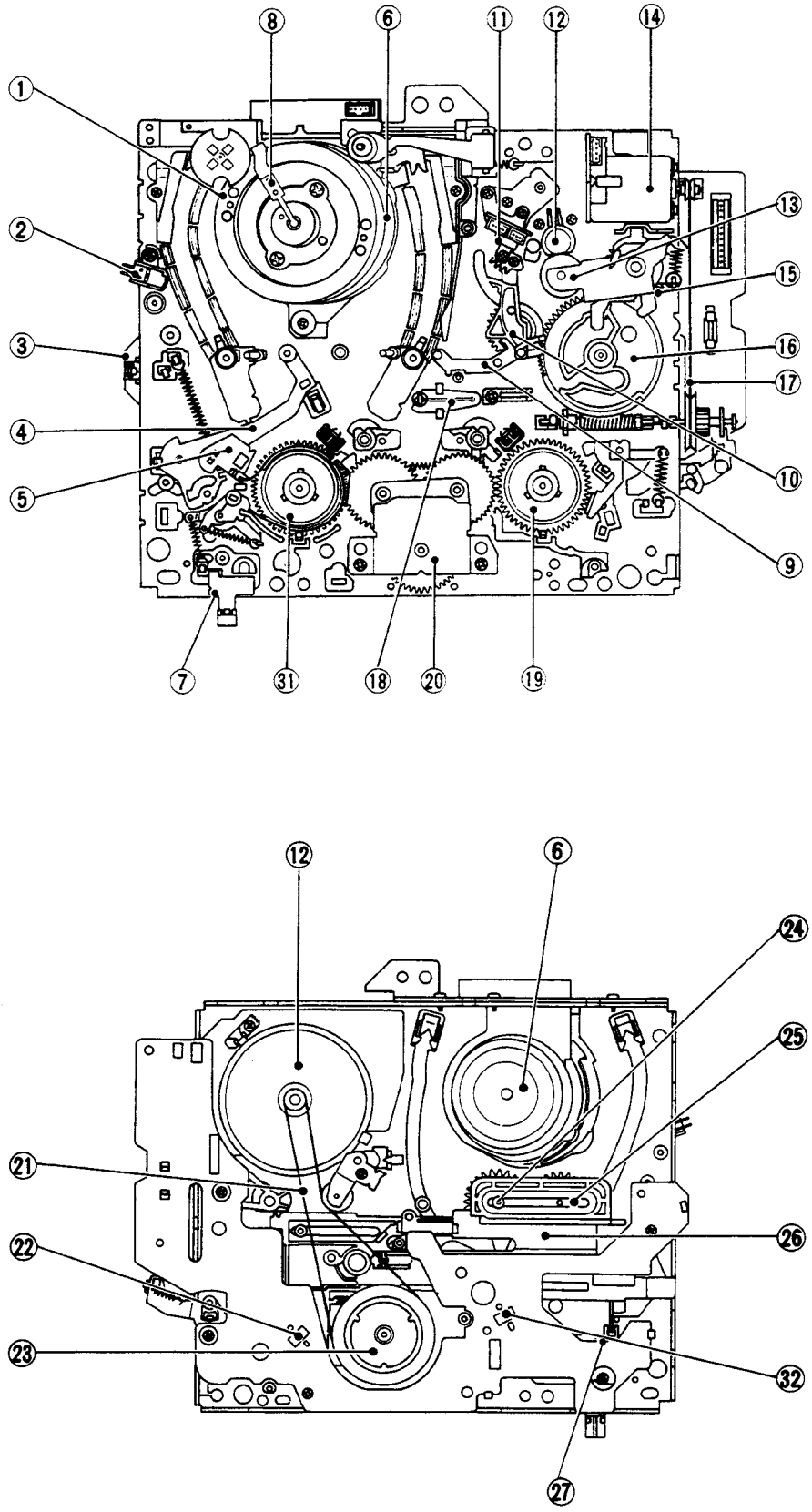



**Fig. 1-3-2** Bottom view of main-deck

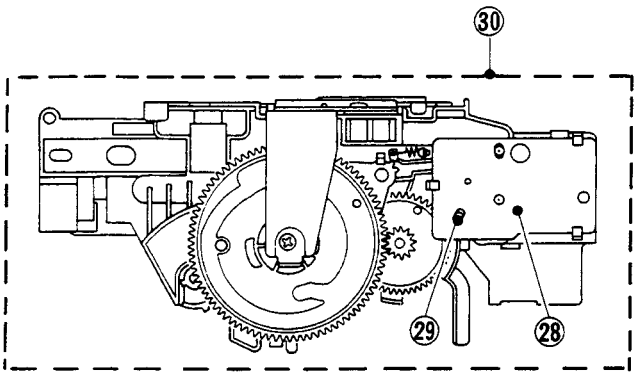



Fig. 1-3-3 Side view of cassette housing

### A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

### B. Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.
Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

| Category | Part No. |
|---|---|
| Oil | COSMO-HV56 |
| Grease | KANTO-G-31KAV |

**Table 1-1**

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

**Note:** *Stir grease that has been stored for an extended period.*

### C. Main mechanical parts

See Fig.s 1-3-1, 1-3-2 and 1-3-3.

| No. | Symbol | Parts Name | See Section |
|---|---|---|---|
| 1 | M32A | Upper drum assy | 1.5.1 |
| 2 | M44 | Full erase head | |
| 3 | 51Q1 | End sensor | |
| 4 | M41 | Tension arm assy | 1.5.4 |
| 5 | M42 | Tension band assy | 1.5.4 |
| 6 | M32C | Lower drum motor assy | 1.5.2 |
| 7 | M461 | REC safety switch | |
| 8 | M32D | Brush assy | |
| 9 | M449 | Half loading gear assy | 1.5.5 |
| 10 | M447 | Guide arm assy | 1.5.5 |
| 11 | M48 | A/C head | 1.5.3 |
| 12 | M422 | Capstan motor | |
| 13 | M442 | Pinch roller arm assy | |
| 14 | M434 | Loading (Mode) motor assy | |
| 15 | M446 | Pinch roller cam | 1.5.5 |
| 16 | M438 | Control cam | 1.5.5 |
| 17 | M437 | Loading belt | |
| 18 | M460 | LED holder | |
| 19 | M430 | Reel disk (take-up) | |
| 20 | M424 | Idler gear unit | |
| 21 | M429 | Timing belt | |
| 22 | 51PS1 | Take up reel sensor | |
| 23 | M426 | Clutch unit | 1.5.6 |
| 24 | M433 | Take up loading arm assy | 1.5.7 |
| 25 | M432 | Supply loading arm assy | 1.5.7 |
| 26 | M439 | Plate assy | 1.5.7 |
| 27 | M462 | Slide encorder (S3) | |
| 28 | 56PHS3 | Cassette sensor | |
| 29 | 56Q2 | Start sensor | |
| 30 | M36 | Cassette housing assy | |
| 31 | M470 | Reel disk (supply) | |
| 32 | 51PS2 | Supply reel sensor | |

- Symbol interpretation example

M32A: M = Exploded view symbol, 32A = Ref. No.
56 Q2: 56 = Board No., Q2 = Ref. No.

## 1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

### 1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

| System | No. | Parts Name | Symbol No. | Periodic servicing schedule (operation hours) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | Overhaul |
| Tape Transport | 1 | Upper drum | M32A | ★ | ★ | ☆ | ○ | ○ | ○ | ○ | ○ | ● |
| | 11 | A/C head | M48 | ★ | ★ | ★ | ○ | ○ | ○ | ○ | ○ | ● |
| | 13 | Pinch roller | M442 | ★ | ★ | ★ | ○ | ○ | ○ | ○ | ○ | ● |
| | 2 | Full erase head | M44 | ★ | ★ | ★ | ○ | ○ | ○ | ○ | ○ | ● |
| | 4 | Tension arm | M41 | | | | | | | | | ● |
| | 6 | Lower drum | M32C | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 12 | Capstan (shaft) | M422 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ● |
| | 9 | Half loading gear | M449 | | | | | | | | | ● |
| | 10 | Guide arm | M447 | | | | | | | | | ● |
| Drive | 12 | Capstan motor | M422 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 17 | Loading Belt | M437 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 21 | Reel Belt | M424 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 19 | Take-up reel disk | M430 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 31 | Supply reel disk | M470 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | 23 | Clutch assy | M426 | | | | | | | | ○ | ● |
| | 14 | Loading motor | M434 | | | | ○ | ○ | ○ | ○ | ○ | ● |
| | | Worm clutch assy | M436 | | | | | | | | △ | ● |
| | 26 | Plate assy | M439 | | | | | | | | △ | ● |
| Others | 5 | Tension band | M42 | | | | ○ | | | | ○ | ● |
| | 8 | Brush | M32D | | | | ○ | | | | ○ | ● |

★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
No: Refer to Main mechanical parts

▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection or Replacement if necessary

**Table 1-4-1** Approximate maintenance schedule

## 1.5 MAIN PARTS REMOVAL AND REPLACEMENT

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| 1 | Upper drum assembly<br>•Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels<br>•Cause: Worn or damaged video heads, poor response, etc. | | |

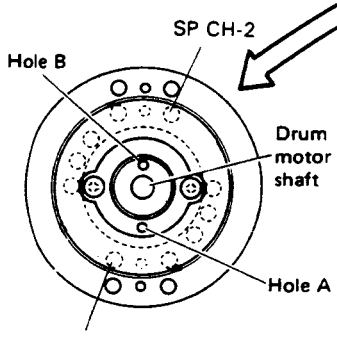



**Fig. 1-5-1**
DRUM TOP VIEW

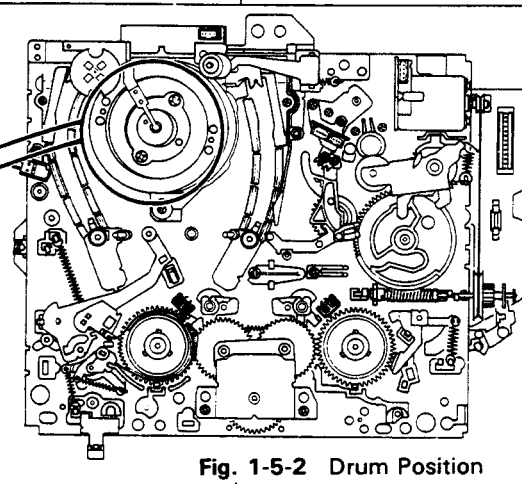


**Fig. 1-5-2** Drum Position

| | |
|---|---|
| Mounting direction<br>See Fig. 1-5-1.<br>(Symptom: no picture) | After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B. |
| Axis wobble<br>See Fig. 1-5-2.<br>(Symptom: jitter, poor FM linearity)<br>**PB FM: Main board TP206**<br>**DRUM FF: Main board TP411** | Record and playback in SP mode.<br>Confirm absence of large difference between channels. (Fig. 1-5-3) |

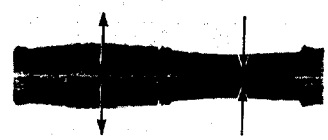


**Fig. 1-5-3** Axis wobble

FM linearity check
See Fig. 1-5-5.
(Symptom: vertical sync absent, picture noise)
**PB FM: Main board TP206**
**DRUM FF: Main board TP411**

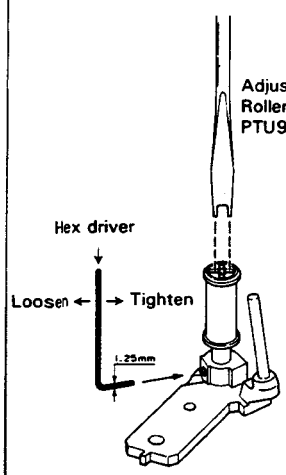



**Fig. 1-5-4** S.T. Pole base

**Fig. 1-5-5** FM linearity

$\frac{b}{a} \geqq 0.7$, $\frac{c}{a} \geqq 0.65$, $\frac{d}{a} \geqq 0.65$

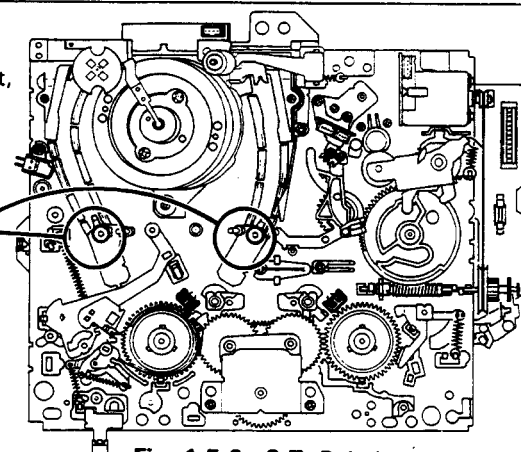
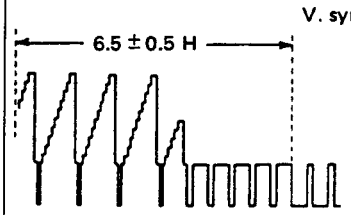
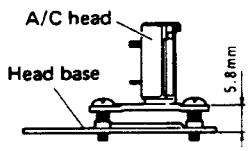
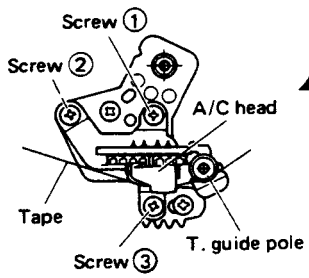
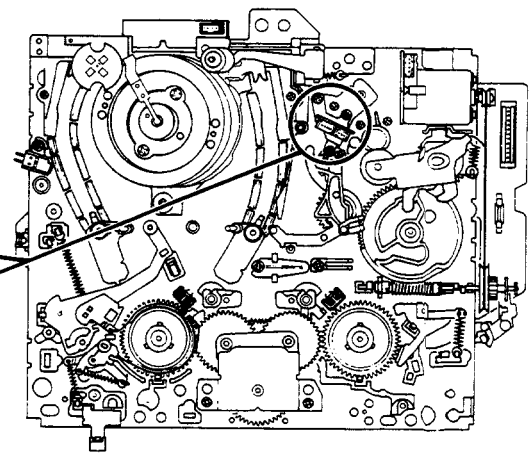
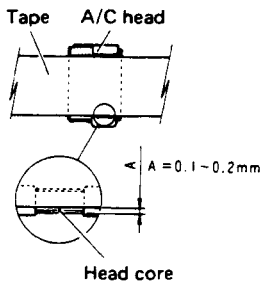
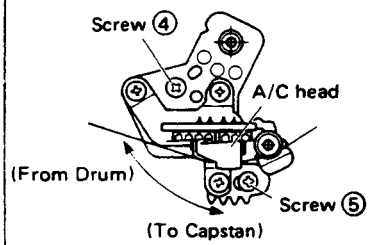
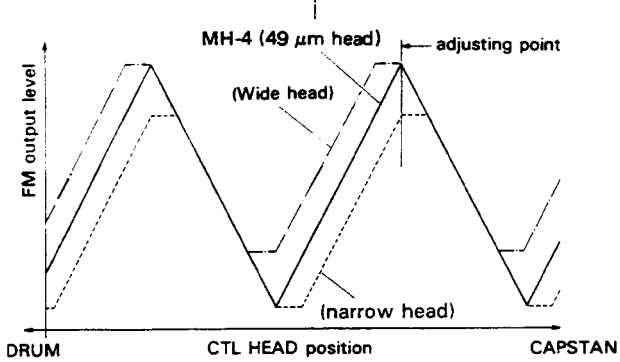


**Fig. 1-5-6** S.T. Pole base position

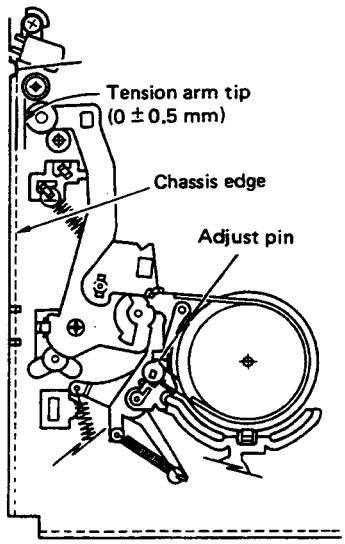
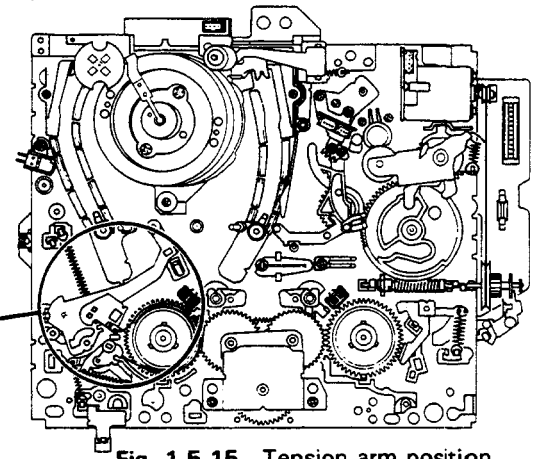
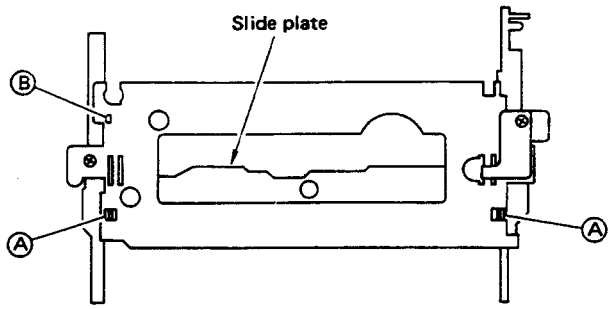
1) Play stairstep signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point.
2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) by turning the guide roller of the take-up pole base.

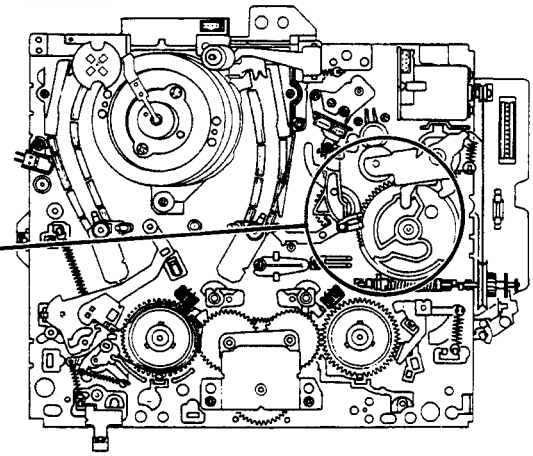
**Note:** ***If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.***

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| | PB switching point<br>•Symptom: switching noise at picture bottom. | VIDEO OUT<br>  <br><br>**Fig. 1-5-7**<br>PB Switching Point | 1) Connect an oscilloscope to TP210.<br>2) Set the MH-2 alignment tape into the cassette housing. Play back the stairstep segment of MH-2 alignment tape.<br>3) Trigger the oscilloscope externally (– slope) with the signal from TP411 (DRUM FF) of the main board.<br>4) Adjust R420 to position the trigger point 6.5 H ±0.5 H from V. sync as shown in Fig. 1-5-7. |
| 2 | Lower drum assembly<br>•Symptoms: Poor FM linearity, noisy rotation, jitter<br>•Cause: Lead and bearing wear | Check FM linearity and switching point. | See above upper drum assembly items. |
| | | Check control head phase (X value)<br>Symptom: tracking error<br>PB FM: Main board TP206<br>DRUM FF: Main board TP411 | 1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the + and – buttons simultaneously in the onscreen mode.<br>Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually.<br>2) Refer to the A/C head adjustments. |
| 3 | A/C head<br>  <br><br>**Fig. 1-5-8**<br>Temporary height<br>  <br><br>**Fig. 1-5-9**<br>Inclination/Azimuth/ Height adj. |  <br>**Fig. 1-5-10** A/C HEAD position | |
| | | Temporarily set height as indicated in Fig. 1-5-8. | Set the height as indicated in Fig. 1-5-8 to facilitate tape transport checks and adjustments. |
| | | Tilt (forward inclination)<br>See Fig. 1-5-9.<br>(Symptom: audio level varies greatly.) | 1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller.<br>2) Then slowly turn the screw clockwise to where the curling ceases. |
| | | Azimuth<br>See Fig. 1-5-9.<br>(Symptoms: audio low level or noisy)<br>Audio output: Main board<br>AUDIO OUT | 1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope.<br>2) Turn screw ② and adjust for maximum audio output level. |

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| |  **Fig. 1-5-11** Height Adj | Height<br>See Figs. 1-5-9 and 1-5-11.<br>(Symptom: low audio and control signal levels) | 1) Run tape and observe the control head area.<br>2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen.<br>**Note:** *If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.* |
| | | FM linearity | Refer to upper drum assembly items.<br>If adjustment is major, again check the azimuth. |
| |  **Fig. 1-5-12** CTL head phase | Control head phase<br>See Fig. 1-5-12<br>PB FM: Main board TP206<br>DRUM FF: Main board TP411 | 1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Tracking Preset by pressing the + and − buttons simultaneously in the onscreen mode.<br>2) Loosen screws ④ and⑤. Set the A/C head positioning tool on screw ④, with the stud inserted into the nearby oblong hole.<br>3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-13.<br>4) Tighten screw ⑤ . Remove the tool and tighten screw ④. |
| |  **Fig. 1-5-13** CTL head phase | | |

**Note:** *Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.*

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| 4 | Tension arm assembly<br>Tension band assembly<br>  <br><br>Fig. 1-5-14<br>Tension arm assy | Tension pole position<br>See Fig. 1-5-14.<br>(Symptom: poor FM waveform response) |  <br>Fig. 1-5-15 Tension arm position<br>1) Remove video cassette tape and set for the playback mode as following steps.<br>2) Disconnect VCR from AC. Slightly rotates the loading motor counterclockwise by hand, then press the lock level portion Ⓐ of the cassette housing by hand as shown in Fig. 1-5-16.<br>3) Move the raised portion of the cassette housing slide plate to fully forward by hand with loading motor. At this time, again press the lock level portion Ⓑ of the cassette housing slide plate to lower the cassette housing (internal holder of the cassette housing is locked in lowered position).<br>4) Cover the cassette LED with opaque material (insulated tape with black).<br>5) Connect VCR to AC. Press the power button on the Front panel and set for the playback mode.<br>6) Turn the eccentric adjust pin to align the edge of the chassis with the tension arm tip as shown in Fig. 1-5-14. |
| |  <br><br>Fig. 1-5-16 Cassette housing | Back tension<br>(Symptom: skew) | 1) When the tension pole position is correctly adjusted, the back tension will assume the correct value.<br>2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading of 30 to 43.<br>3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere. |

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| 5 | Pinch roller cam<br>Control cam<br>Half loading gear assembly<br>Guide arm assembly | | Set mechanism to Eject mode (internal holder of the cassette housing is locked in raised) position. |
| | | |  |
| | | | Fig. 1-5-17 Control cam position |
| | | Important: Do not remove or disturb parts other than those mentioned.<br>See Fig. 1-5-16. | 1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck.<br>2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned.<br>(If the control cam does not fit readily, shift the rear plate assembly within the range of play.)<br>3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring.<br>4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly. |
| | | Cassette housing assembly | Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked. |
| 6 | Clutch assembly | Take-up torque<br>(Symptom: inadequate take-up torque) | 1) Remove cassette housing and set for play-back mode (see Section 1.2).<br>2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100. |

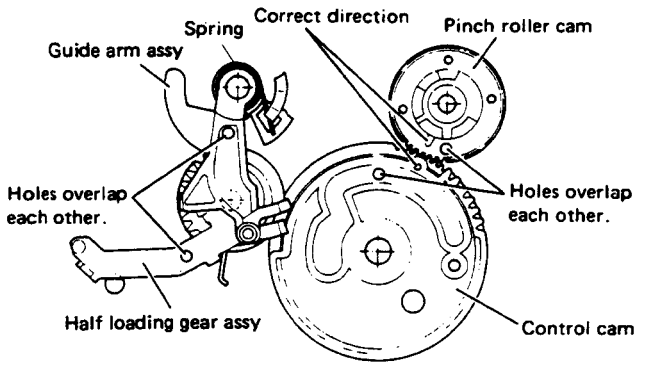



Fig. 1-5-16 Control/Pinch roller cam

| No. | Item | Checkpoints | Adjustment and Checks |
|---|---|---|---|
| 7 | Take-up loading arm assembly<br>Supply loading arm assembly<br>Plate assembly | | Note:<br>• *Set mechanism to the Eject or Stop mode before removing these parts.*<br>• *The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.* |
| | | Mounting position alignment<br>• Remove the tension arm assembly to facilitate operation.<br>See Fig. 1-5-18. | 1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets.<br>2) Shift the plate assembly and install with the holes of the upper and lower components overlapped. |
| | | Slide switch<br>See Fig. 1-5-18. | Be sure to engage the slide switch slider with the edge of the plate assembly. |

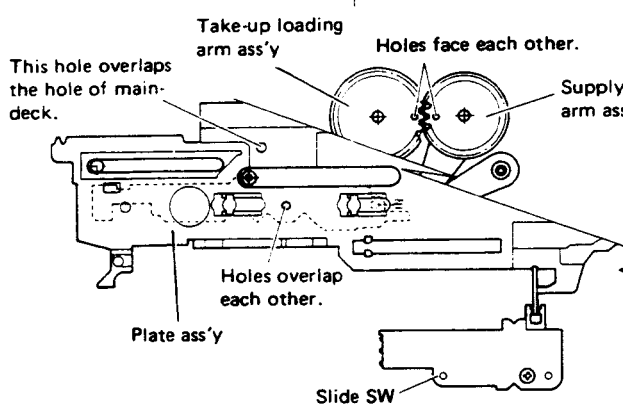



Fig. 1-5-18

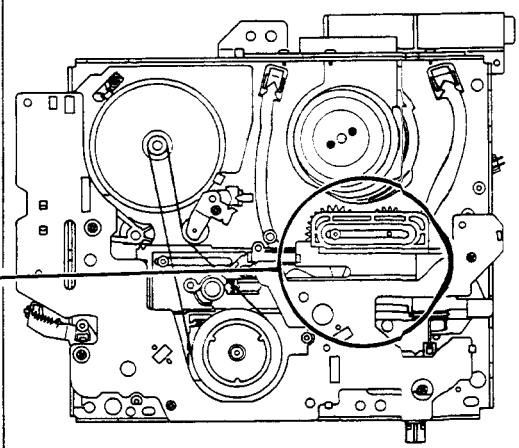


Fig. 1-5-19
T.S. Loading arm position

# SECTION 2
# ELECTRICAL ADJUSTMENTS

## 2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

### 2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2
12. Presetting unit: PTU94008.

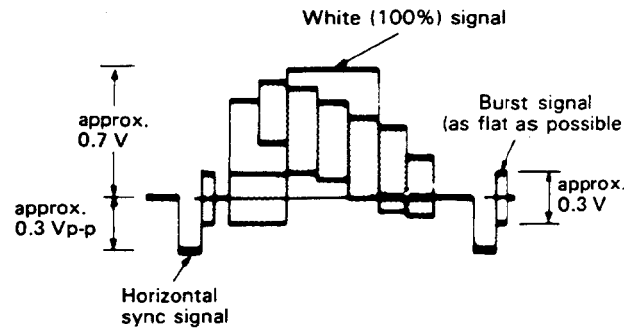



**Fig. 2-1-1** Color bar signal of pattern generator

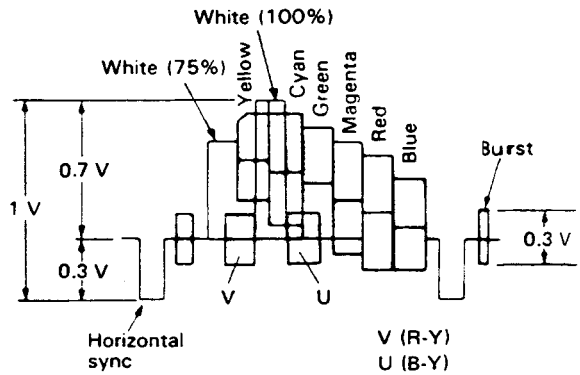



**Fig. 2-1-2** Color bar signal waveform

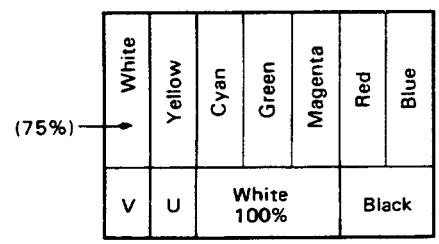



**Fig. 2-1-3** Color bar pattern

### 2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

**No.** Checks and adjustments are numbered in the recommended sequence in which they are to be performed.

**Item** Name assigned to the particular check and adjustment step.

**Check Point** Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.

**Adjustment Parts** Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (—) indicates check only.

**Signal & Mode**

- Input signal required to perform adjustment. Dash (—) indicates that special signal is not required.
- Equipment operating mode at time of check or adjustment.

| | |
|---|---|
| Color bars | Color bars signal as video input. |
| Stairstep | Stairstep signal as video input. |
| 1 kHz | 1 kHz sinewave as audio input signal. |
| MH-2 color bars | Color bars segment of MH-2 alignment tape. |
| MH-2 stairstep | Stairstep segment of MH-2 alignment tape. |
| MH-2 1 kHz | 1 kHz audio signal segment of MH-2 alignment tape. |
| MH-2 RF sweep | RF sweep segment of MH-2 alignment tape. |
| E-E | Power on and machine in Stop mode. |
| REC | Recording mode |
| PB | Playback mode |
| SEARCH | Search (FWDS and REVS) playback mode |
| SLOW | Slow motion playback mode |
| STILL | Pause during playback mode |
| SP mode | SP recording speed |

**Description** This column provides an explanation of the step, notes and adjustment values, and reference to waveforms where applicable.

## 2.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 1 | 5V DC output voltage | • REC | •TUNER<br>•SP | •Q806-B<br>•TP803 (GND) | •R811 | 1) Connect a digital voltmeter between Q806-B and TP803.<br>2) Record in the TUNER mode, adjust R811 for 5.3±0.05 V. |

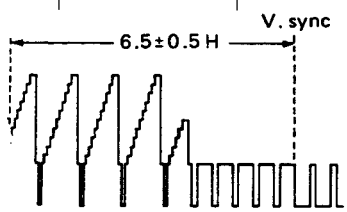
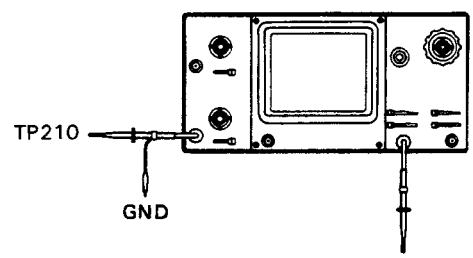
## 2.3 TIMER CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the T/D/S board.*

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 1 | Clock | • EE | •AUX | •IC1-16 | •C6 | Note: ***For below adjustments use 10:1 probe with input capacitance lessthan 100 pf.***<br>1) Disconnect VCR from AC. Connect a frequency counter between IC1-16 and GND.<br>2) Short IC1-8 to GND, then short the leads of capacitor C3 once in order to reset IC1.<br>3) Connect VCR to AC. All FDP Segments are on.<br>4) Adjust C6 for 2048.000±0.002 Hz (488.2808 to 488.2818 μs). |

## 2.4 SERVO CIRCUIT

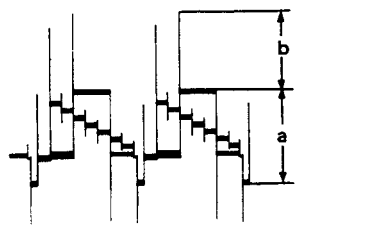
**Note:** ***Unless otherwise specified, all test points and adjustments are located on the MAIN board.***

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 1 | SP PB switching point | • PB | • MH-2 stairstep<br>• SP<br>• Trigger slope (−) | • TP210 | • R420 | 1) Connect an oscilloscope to TP210.<br>2) Play back the stairstep segment of MH-2 alignment tape.<br>3) Trigger the oscilloscope externally (− slope) with the signal from TP411.<br>4) Adjust R420 to position the trigger point 6.5±0.5 H from V. sync.<br>  <br><br>Fig. 2-4-1<br>  <br><br>Fig. 2-4-2 |
| 2 | SP slow tracking preset | • REC then PB (slow) | • SP | • TV monitor | • Presetting unit (PTU-94008) | **Note:** ***Set VCR to A mode by remote controller.***<br>1) Set recording video tape into the cassette housing.<br>2) Receive a colour broadcast on a VHF-HI channel or supply a colour bar signal to VIDEO IN.<br>3) Record a colour broadcast or colour bar signal in the SP mode.<br>4) Play back recorded signal in the FWD slow mode and set the tracking control of the FRONT panel to the center position by simultaneously pressing the (+) and (−) tracking buttons.<br>5) Observe the display one a monitor-TV and adjust for optimum noise condition (best tracking) by depressing "B (−)" or "C (+)" buttons of presetting unit as required.<br>6) Depress the STOP button on the FRONT panel.<br>7) Confirm that the bar noise is not visible on the monitor in the slow mode. |

## 2.5 VIDEO CIRCUIT

**Note:** ***Unless otherwise specified, all test points and adjustments are located on the VIDEO unit board.***

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| | **IMPORTANT: Item 1,2,3 and 4**<br>1. Ordinarily avoid performing these adjustments. It should be performed only if IC1 of the VIDEO UNIT board has been replaced.<br>2. To adjust, replace fixed resistor with variable resistor, then adjust as required. | | | | | |
| 1 | EE level & White clip | • EE | •Colour bar | •CN207-15 (Main board)<br>•IC1-22 | •R60<br>•R64 | 1) When IC1 of the VIDEO UNIT board is replaced, it may also be necessary to replace R60 and R64 with adjustable resistors.<br>2) Confirm 2.00 ($^{+0.07}_{-0.05}$) Vp-p EE level at CN207-15 and white clip of 90±4% at IC1-22. If necessary, replace R60 with NVP1301-103NU and R64 with NVP1301-332NU.<br>3) Supply a colour bar signal to VIDEO IN, connect one channel of a dual trace oscilloscope to CN207-15 and the other channel to IC1-22.<br>4) Alternately adjust R60 and R64 for 2.00 ($^{+0.07}_{-0.05}$) Vp-p at CN207-15 and white clip of 90±4% at IC1-22. |
| 2 | Carrier & Deviation | • EE | •AUX | •CN206-9 (Main board) | •R41 | 1) When IC1 of the video unit board is replaced, it may also be necessary to replaced R41 and R42 with adjustable resistors.<br>2) Play back a colour bar segment of MH-2 and confirm 1.00 (±0.06) Vp-p Y level at VIDEO OUT (75Ω load). If necessary, replace R41 with NYVP1301-223NU and R42 with NVP1301-103NU.<br>3) Without an incoming signal. Terminate VIDEO OUT with TV-monitor (75Ω load), connect a frequency counter to CN206-9 on the MAIN board.<br>4) Adjust R41 for 3.8±0.04 MHz.<br>5) Play back a colour bar segment of MH-2, and confirm 1.00 (±0.06) Vp-p at VIDEO OUT. If necessary, redplace R17 with NVP1301-222NU. |
| | | • REC then PB | •Colour bar<br>•SP<br>•AUX | •TP210 Video out (Main board) | •R42 | 6) Record and play back a colour bar signal. If necessary, before recording, adjust R42 so that the Y level becomes 1.00 (±0.06) Vp-p at VIDEO OUT during playback mode. |




a : b = 100 : 90

**Fig. 2-5-1** White clip

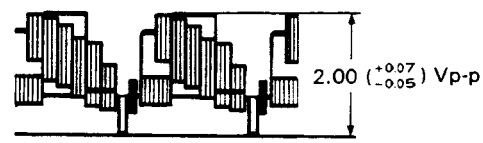



**Fig. 2-5-2** VIDEO OUT

**IMPORTANT:**
**Ordinarily avoid performing this adjustment. It should be performed only if IC1 of the VIDEO UNIT board has been replaced or if significant waveform distortion and S/N deterioration occur during recording and playback due to deficient adjustment of the carrier set and deviation.**

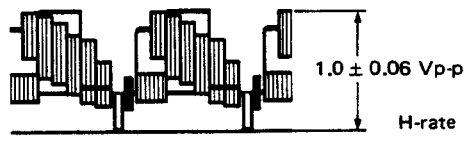



**Fig. 2-5-3** Carrier and deviation

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 3 | YNR NC balance | • EE | •Colour bar<br>•AUX | •IC1-9 | •R56 | 1) When IC1 of the video unit board is replaced, it may also be necessary to replace R56 with adjustable resistor.<br>2) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to IC1-9 on the VIDEO UNIT board.<br>3) Confirm minimum DC step difference. If necessary, replace R56 with NVP1301-152NZ.<br>4) Adjust R56 for minimum DC step difference. |
| 4 | PB Y level | • REC then PB | •Colour bar<br>•SP<br>•AUX<br>•TP411 (DRUM FF) Main board | •CN207-15 (Main board) | •R17 | 1) When IC1 of the video unit board is replaced, it may also be necessary to replace R17 with adjustable resistor.<br>2) Record and play back a colour bar signal, confirm 2.00 ($^{+0.07}_{-0.05}$) Vp-p Y level at CN207-15. If necessary, replace R17 with NVP1301-222NU.<br>3) Connect oscilloscope to CN207-15.<br>4) Record and play back a colour bar signal, adjust R17 for 2.00 ($^{+0.07}_{-0.05}$) Vp-p at CN207-15. |
| 5 | REC FM level | • REC | •Colour bar<br>•SP | •TP3 (Pre/Rec board) | •R246 (Main board) | 1) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to TP3 of the PRE/REC board.<br>2) Record the colour bar signal in the SP mode.<br>3) Adjust R246 for 0.42 Vp-p pedestal level between centers of the waveform outline at the pedestal portion. |

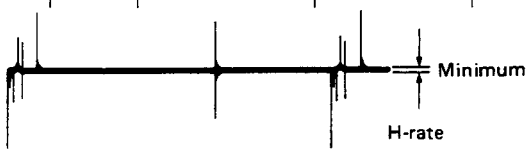



**Fig. 2-5-4** YNR NC balance

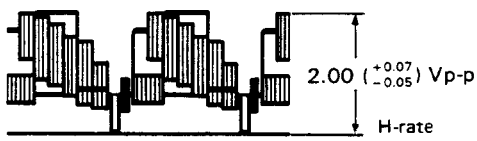



**Fig. 2-5-5** PB Y level

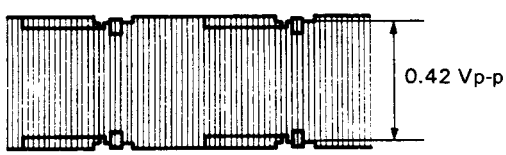



**Fig. 2-5-6** REC FM level

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 6 | REC colour level and Ch balance | • PB | • MH-2 colour bar<br>• SP<br>• Auto tracking off | • IC1-41 | • R215 (Main board) | 1) Connect an oscilloscope to IC1-41 and observe colour signal level.<br>2) Set the MH-2 alignment tape into the cassette housing, play back the colour bar segment of MH-2 alignment tape.<br>3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "−" tracking buttons.<br>4) Adjust by pressing the "+" and "−" tracking buttons of the Front panel for maximum level of the colour waveform and make a note of the higher colour level "A".<br>5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape. |
| | | • REC then PB | | | | 6) Set recording video cassette into the cassette housing. Supply a colour bar signal to VIDEO IN.<br>7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Main board. Use (−) trigger for CH1 and (+) triger for CH2.<br>8) Record a colour bar signal in the SP mode.<br>9) Play back recorded colour bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "−" tracking buttons and confirm 85±5% of the noted colour level at IC1-41. If necessary, before recording, adjust R215 so that the higher level channel becomes 85±5% of the noted level "A" during playback as shown in Fig. 2-5-7. At this time, confirm that the channel level difference is within 3 dB.<br>**Note:** ***Repeat the above step (9) several times.*** |

**Fig. 2-5-7** REC colour level

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 7 | SP PB Frequency | • REC then PB | •Video sweep<br>•SP<br>•Auto tracking off | •TP210 (Main board) | •R208 (Main board) | 1) Terminate VIDEO OUT with monitor - TV (75 Ω load), supply a video sweep signal without burst to VIDEO IN.<br>2) Set recording video cassette into the cassette housing. Record a video sweep signal without burst in the SP mode.<br>3) Connect an oscilloscope to TP210. Play back recorded video sweep signal in the SP mode, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (−) tracking buttons.<br>4) Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale.<br>5) Adjust R208 to position the 2 MHz of channel-1 portion at 2.4 — 3.0 (−1 ± 1 dB) of the oscilloscope graduations as shown in Fig. 2-5-8. At thie time, confirm that the channel difference is within 2 dB. |
| | | | •TV broadcast<br>•Auto tracking off | •TV monitor | | **Alternate method**<br>1) Set recording video cassette into the cassette housing, receive a colour broadcast on a VHF channel.<br>2) Record a colour broadcast that shows a good depiction of human facial contours.<br>3 Play back recorded colour broadcast, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (−) tracking buttons.<br>4) Adjust R208 to obtain distinct facial features on the monitor.<br>**Note:** ***R208 nearly at centre position.*** |
| 8 | SECAM DET | • EE | •SECAM colour bar | •TP280 (Main board) | •L282 (Main board) | 1) Connect an oscilloscope to TP280.<br>2) Adjust L282 so that A and B are related as follows:<br>A : B = 3 : 4 |

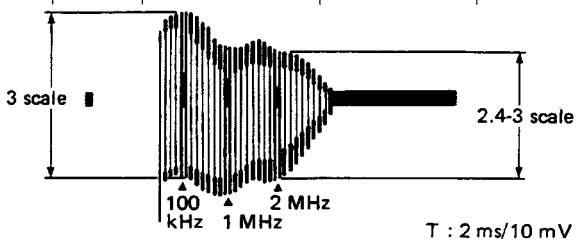



**Fig. 2-5-8** PB frequency

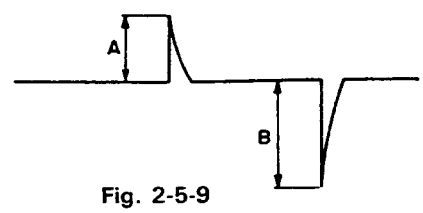



**Fig. 2-5-9**

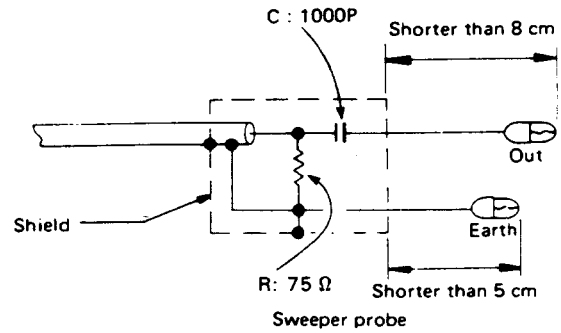
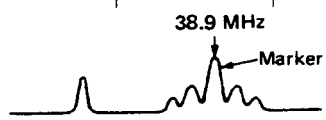
## 2.6 AUDIO CIRCUIT

**Note:** ***Unless otherwise specified, all test points and adjustments are located on the MAIN board.***

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 1 | Audio Bias level | • REC | •No input signal<br>•SP<br>•AUX | •TP31 (+)<br>•TP32 (−) | •R11 | 1) Connect a millivoltmeter between TP31 and TP32.<br>2) Set for REC mode without incoming signal.<br>3) Adjust R11 for 3.1 mVrms. |

## 2.7 TUNER/IF CIRCUIT

Note: ***Unless otherwise specified, all test points and adjustments are located on the TUNER/IF board.***

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| **Equipment required:**<br>1. Oscilloscope<br>2. IF sweep signal generator with suitable markers (PIF, etc.)<br>3. Sweeper probe (sweep signal supply cable) as shown below. | | | | | |  <br>**Fig. 2-7-1** |
| 1 | VCO | • EE | •Tuner | •IC1-17 | •T1 | 1) Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1.<br>Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope.<br>Connect the oscilloscope to pin 17 of IC1 (VIDEO DET OUT) and adjust T1 to align the waveform with the frequency marker as shown in Fig. 2-7-2. |
| | | | | | |  <br>VCO and sweep signal (beat)<br>**Fig. 2-7-2** |
| | | | •Tuner<br>•TV broadcast | •TV monitor | •T1 | **Alternate methjod:**<br>1) Receive a colour broadcast on a VHF-HI channel.<br>2) Adjust T1 to obtain a fine picture on the monitor. |
| • **Before the following adjustments:**<br>1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω.<br>2. Set a TV channel signal generator as follows.<br>Video: 65 dBμ/75 Ω, colour bar 87.5% modulation<br>Audio: 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation | | | | | | |
| 2 | RF AGC | • EE | •Tuner<br>•TV broadcast | •TV monitor | •R72 | 1) Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R72 for maximum level, then again adjust R72 for −8 dB again. |
| | | | | | | **Alternate method:**<br>**Note:** ***Adjust R21 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.***<br>1) Adjust R72 to minimize noise or streaks on the TV monitor.<br>2) Check for absence of abnormality on all channels. |

| No. | Item | Mode | Signal & Setting | Measurement Point | Adjustment Parts | Adjustment Procedure |
|---|---|---|---|---|---|---|
| 3 | SOUND DET | • EE | • Tuner<br>• TV broadcast | •CN2-5 | • T3 | 1) Use a adjustment circuit as shown in Fig. 2-7-3, and connect a distortion meter as shown in Fig. 2-7-3.<br>2) Adjust T3 for minimum distortion (less than 2.0%).<br>**Alternate method:**<br>1) Receive a colour broadcast on a VHF-HI channel (7 to 13). Connect an oscilloscope to CN2-5.<br>2) Adjust T3 for maximum level at audio sound. |

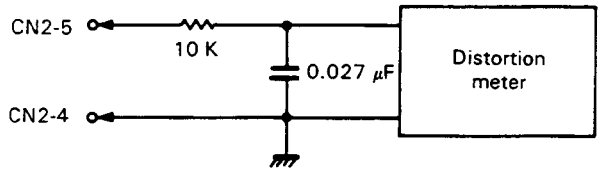
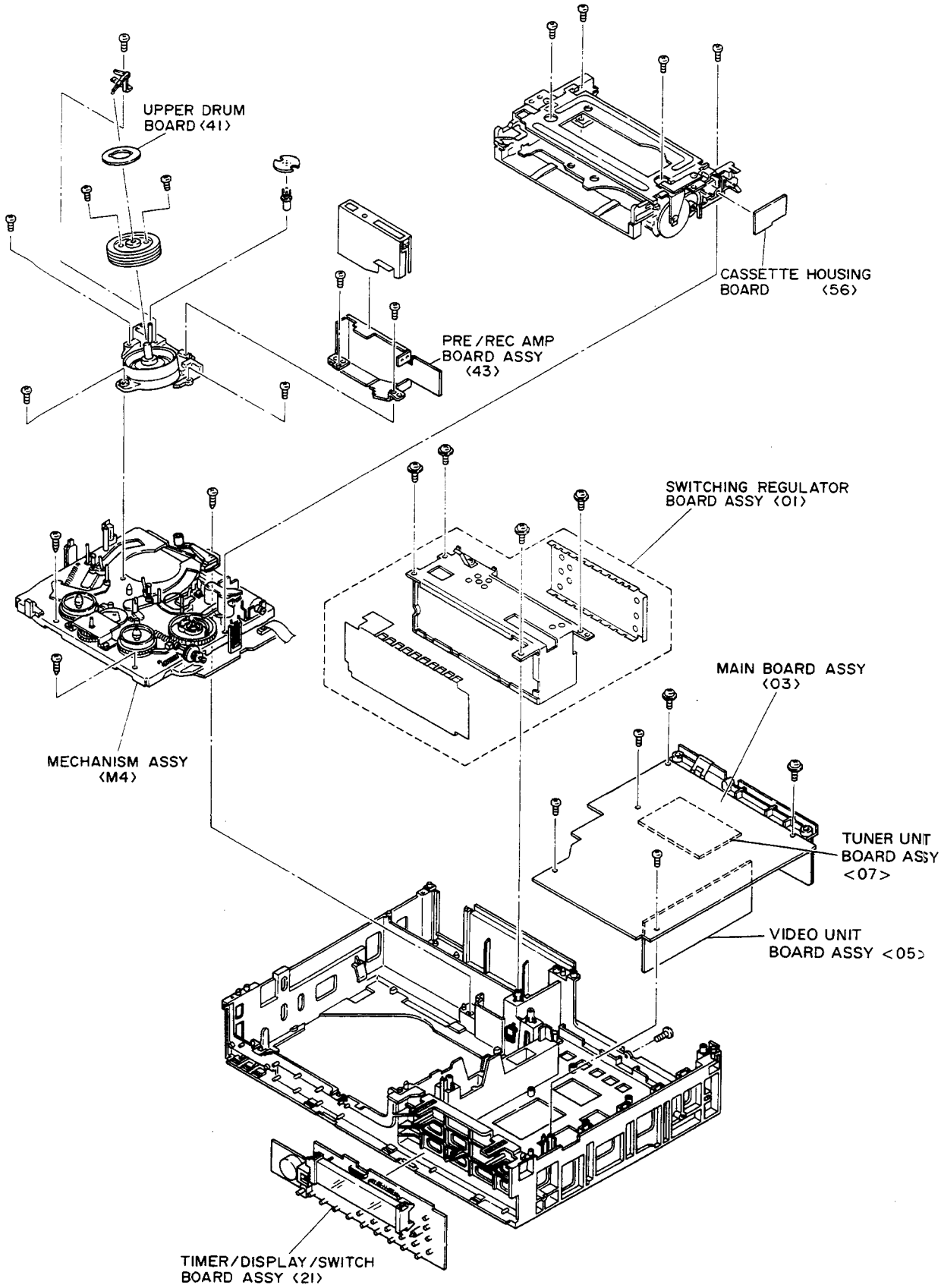



Fig. 2-7-3

# SECTION 3
# CHARTS AND DIAGRAMS

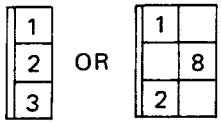
## 3.1 CIRCUIT BOARD AND LOCATION



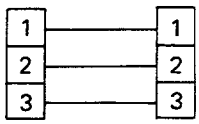
## 3.2 GENERAL INFORMATION

### 3.2.1 Connections

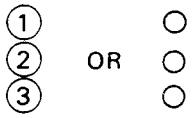
**Note:**
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.



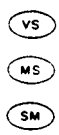
: Connectors



: Board in connectors



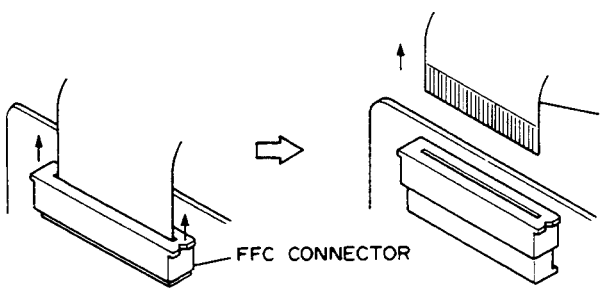
: Direct connections



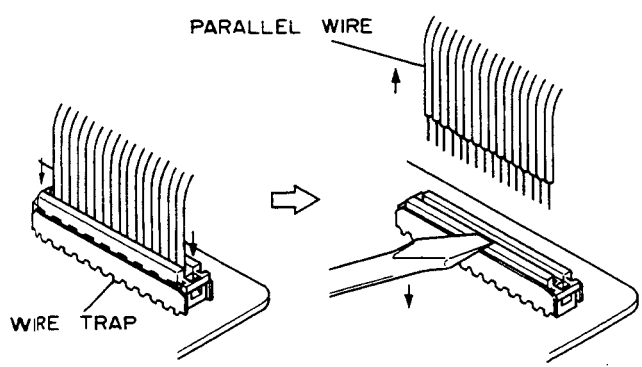
: Connected pattern in the board.
Abbreviations
V : Video M : Mechacon
S : Servo A : Audio
VS : Signal flow from video to servo.

### 3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

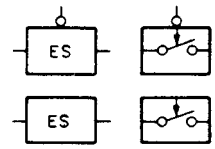



2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.




### 3.2.3 Indications

AUX : Active only at high.
$\overline{AUX}$ : Active only at low.
$\bar{A}U\bar{X}$ : Active only at middle.
$\bar{A}U\bar{X}$ : Active only at open.



: Active only at low for electronic switch.
: Active only at high for electronic switch.

: Low pass filter.

: High pass filter.

: Band pass filter.

: Limiter.

: Detector

: Amplifier.

: Mixer stage.

### 3.2.4 Schematic diagram values

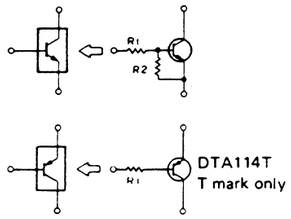
Unless otherwise specified.
1. All resistance values are in ohms, 1/6 W or 1/8 W (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parenthesis.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded ( ) parts are critical for safety. Replace only with specified part numbers.

### 3.2.5 Signal flow in the schematic

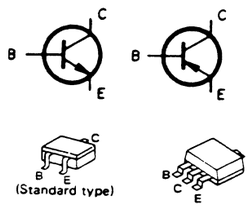
Recording signal path
Playback signal path
REC/PB signal path

## 3.2.6 Semiconductors

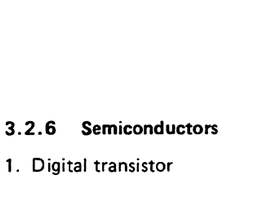
1. Digital transistor




2. Chip transistor



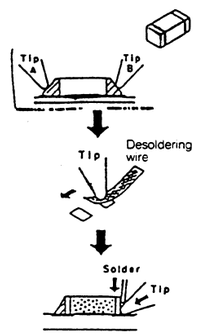
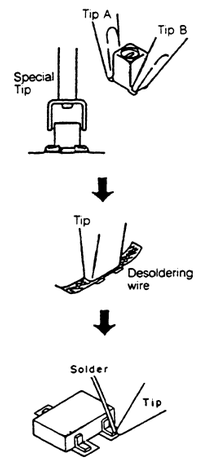
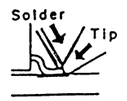

3. Chip diode

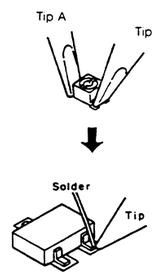
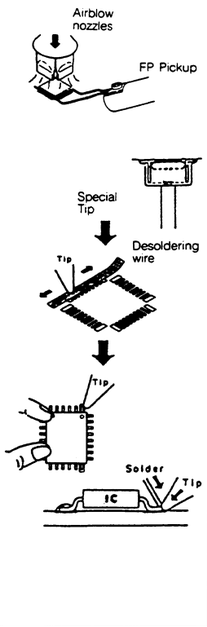



**Note:**
The digital transistor includes built in resistors. It features small size and high reliability.
Both PNP and NPN types are available.

**Uses:**
Inverter, interface, driver circuits.

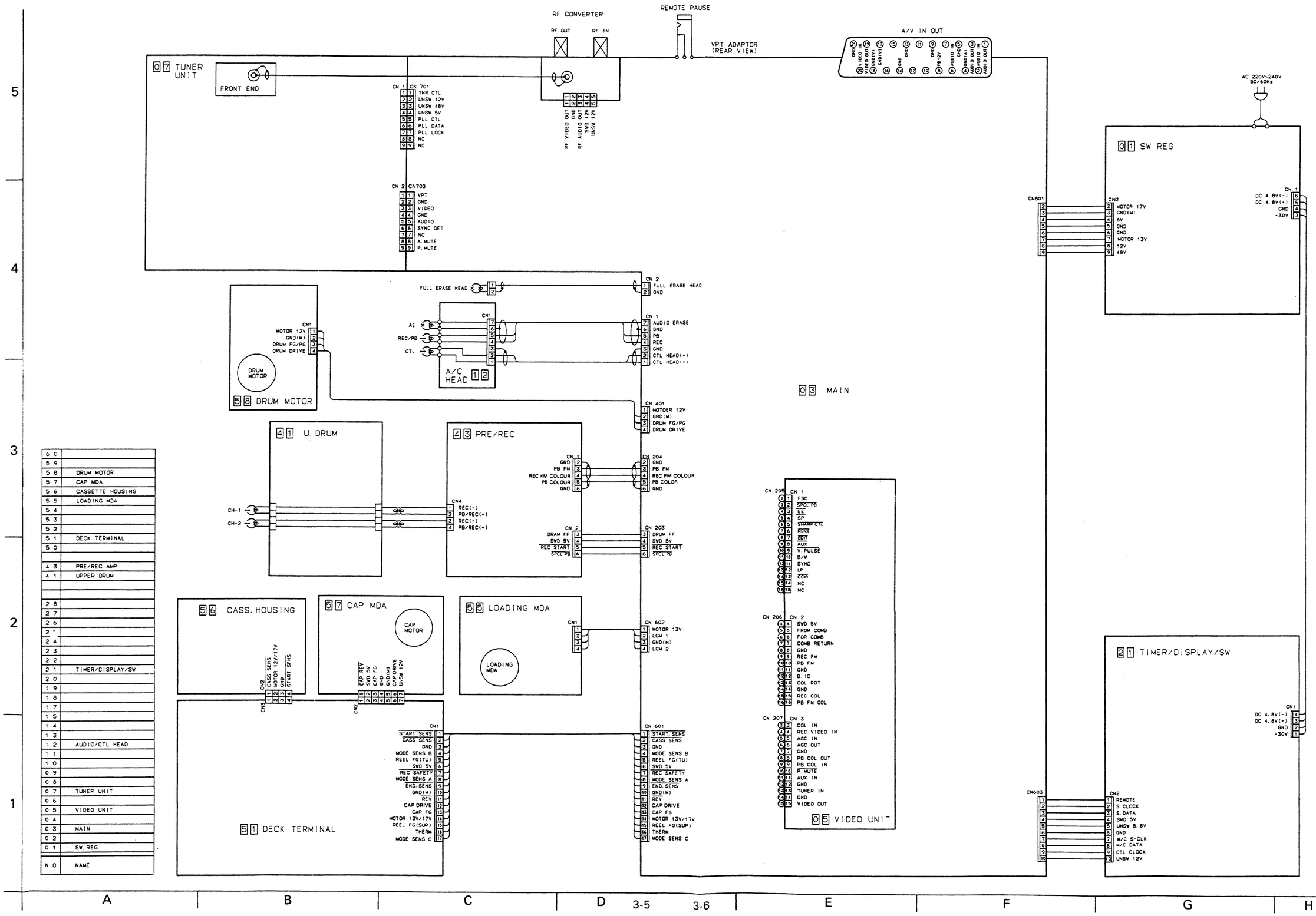
## 3.2.7 Basic knowledge of SMC* parts replacement

| Products | Appearance | Replacement technology | Removal method | Installation method | Soldering tip types | Cautions |
|---|---|---|---|---|---|---|
| Thick Film Chip Resistors<br>Carbon Film Chip Resitors<br>Metal Film Chip Resistors<br>Chip Ceramic Capacitors<br>Chip Triming Resistors | |  | • **Use 2 soldering irons**<br>1. Use thin tip soldering irons.<br>2. Use soldering tip temperature of about 280°C.<br>3. Simultaneously heat both ends of the part.<br>4. While heating, grasp the part with the tips of the soldering irons and remove it.<br>5. Use desoldering wire to completely remove the old solder from the part location of the board.<br>6. A clean pattern for installing the new part is very important. | 1. Clean the area where the new part is to be moundted (use alcohol).<br>2. Apply flux.<br>3. Set part correctly into position, prevent it from shifting.<br>4. Bring the soldering iron tip close to the part contact without actually touching it. Melt thin (0.3 mm) solder between the tip and part so that it flows into the part contact.<br>5. Check work quality with a magnifier. | Thin tip type<br> <br>Small flat-blade tip type<br> | Some parts can be damaged by sudden heating. Preheat the part at about 100°C for several minutes before installing it.<br>Do not touch the part body with the soldering iron.<br>The thin (0.3 mm) solder for miniature parts does not contain adequate flux. Supplementary flux is thus needed in most cases.<br>Set the position carefully and secure the part.<br>A defective trimming resistor cannot be adjusted externally. Replace with an ordinary variable resistor. |
| Chip Inductors<br>Chip Resistor Networks<br>Chip Tantalum Capacitors<br>Chip Tantalum Electrolytic Capacitors<br>Chip Aluminum Electrolytic Capacitors<br>Chip Transformers<br>Chip Filters | |  | • **Special desoldering iron**<br>1. Select soldering tip according to part size.<br>2. Bring the tip into contact with the soldered points.<br>3. When the solder melts, remove the part.<br>4. Remove the old solder with desoldering wire.<br>• **2 soldering irons**<br>1. Use small flat-blade tips.<br>2. Heat both ends of the part simultaneously.<br>3. When the solder melts, grasp and remove the part with the soldering iron tips.<br>4. Remove the old solder with desoldering wire. | 1. Clean the area where the new part is to be mounted (use alcohol).<br>2. Apply flux.<br>3. Set part correctly into position, prevent it from shifting.<br>4. Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact.<br>  <br>5. Check work quality with a magnifier. | Special Soldering tip<br> <br>Small flat-blade tip type<br><br>Thin tip type<br> | Use care not to damage plastic components when soldering.<br>Position the part carefully. This will also affect the soldering operation.<br>Use care regarding soldering iron tip and avoid rapidly heating parts.<br>For larger parts, use a slightly higher temperature (about 300°C).<br>Check after installing (cold solder joints, etc.).<br>Use care not to damage the circuit pattern, especially when removing. |

| Products | Appearance | Replacement technology | Removal method | Installation method | Soldering tip types | Cautions |
|---|---|---|---|---|---|---|
| Chip VRs<br>Chip Trimmer Capacitors<br>Diodes<br>Transistors | |  | • **2 soldering irons**<br>1. Use small flat-blade tips.<br>2. Heat the leads of the part simultaneously.<br>3. When the solder melts, grasp and remove the part with the soldering iron tips.<br>4. Remove the old solder with desoldering wire. | 1. Clean the area where the new part is to be moundted (use alcohol).<br>2. Apply flux.<br>3. Set part correctly into position, prevent it from shifting.<br>4. Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact. | Thin tip type<br> <br>Small flat-blade tip type<br> | Use care not to damage the part when soldering.<br>Check for solder joints, expecially miniature parts with small leads. |
| IC (SOP) (Small Outline Package)<br>IC (SSOP) (Shrink Small Outline Package)<br>IC (VSOP) (Very Small Outline Package)<br>IC (QFP) (Quad Flat Package)<br>IC (VQFP) (Very Small Quad Flat Package)<br>IC (PLCC) (Plastic Leaded Chip Carrier)<br>IC (TSOP) (Thin Small Outline Package) | |  | • **Special desoldering iron**<br>1. Select the tip according to the size and shape of the IC.<br>2. "Tin" the tip with a small amount of solder.<br>3. Set the tip squarely over the IC leads.<br>4. When the solder melts, carefully twist the iron.<br>5. Raise and remove the IC.<br>• **Shaped airblower unit**<br>1. Select the correct nozzle.<br>2. Select the temperature and airblow (suggested: temp. 7, airblow 4).<br>3. Engage the IC removing tool.<br>4. Use the airblow to preheat the IC for about 5 seconds, then heat with the nozzle until the IC remover lifts the part from the board. | 1. Use desoldering wire to remove the previous solder.<br>2. Clean the location with alcohol.<br>3. Apply flux.<br>4. Position the IC and solder two pins at opposite sides.<br>5. Use a sharp tipped soldering iron and carefully solder each pin. (After gaining experience, a thicker tip can be used for better work efficiency.)<br>6. Remove any solder bridges with desoldering wire.<br>7. Inspect the work with a magnifier. | Special soldering tips.<br> <br>Airblow nozzles<br> | Do not reuse removed parts.<br>Use care to avoid solder bridges. Remove any that occurs.<br>Remove the old IC carefully so as not to damage the circuit pattern.<br>Because of the many pins, cleanliness of the pattern is extremely important after removing the IC.<br>Be very precise in positioning the IC.<br>Soldering opposite pins first holds the IC in place and makes soldering the other pins easier.<br>It is important to inspect the work with a magnifier.<br>ICs (especially TSOP) are easily damaged by heat. Do not touch directly with the soldering iron. |

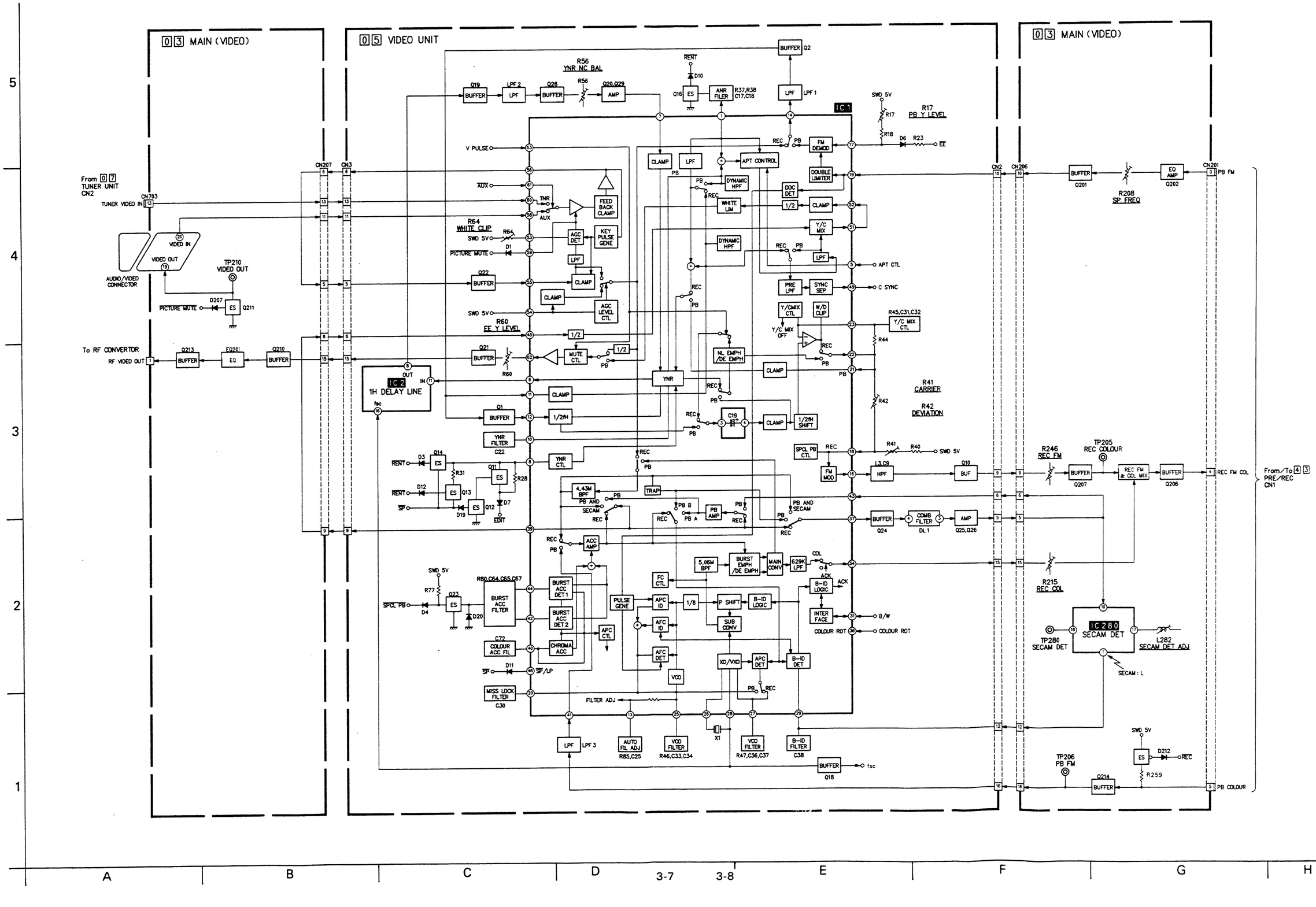
* SMC: Surface Mounted Component

## 3.3 BOARD INTERCONNECTIONS

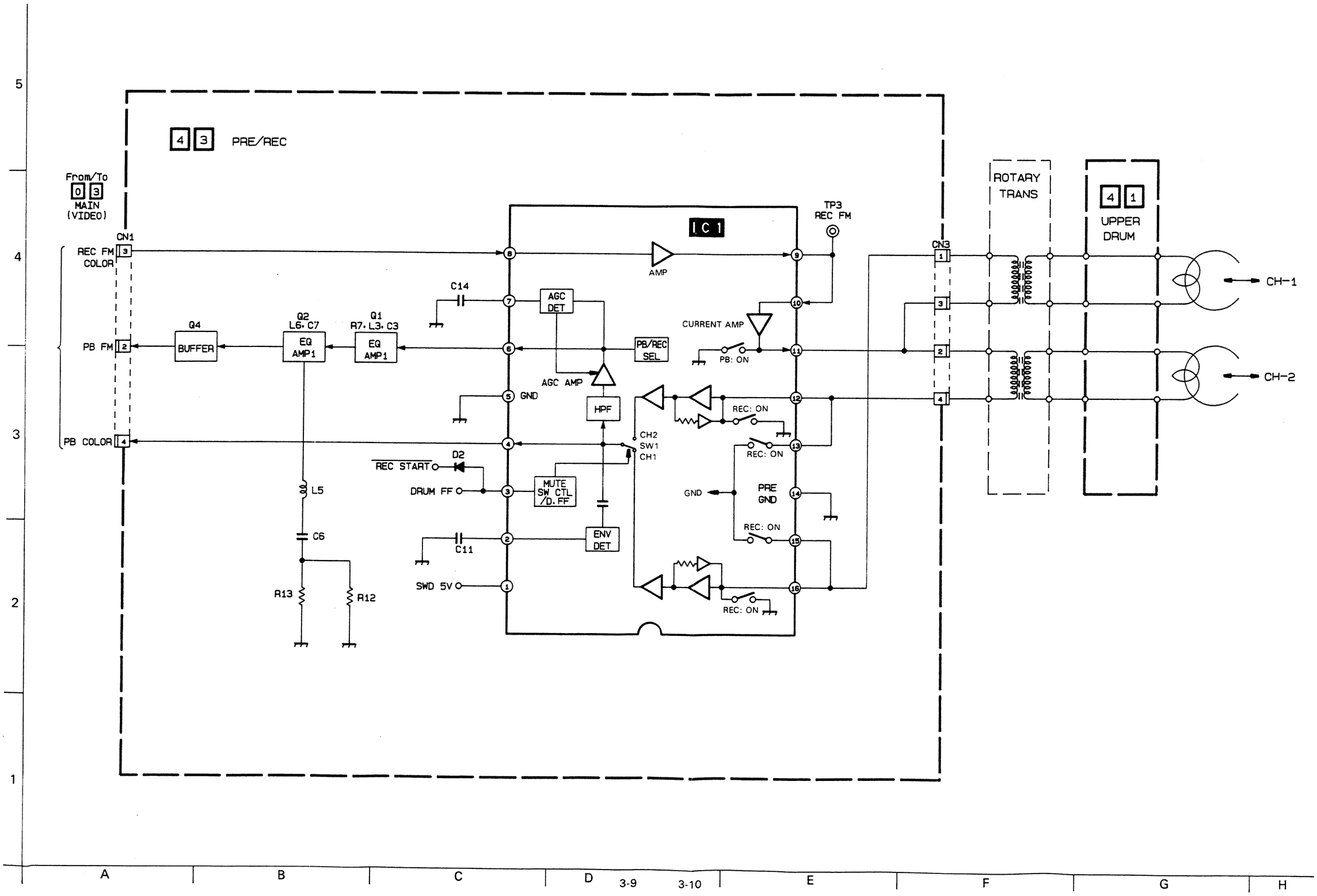



| NO | NAME |
|---|---|
| 60 | |
| 59 | |
| 58 | DRUM MOTOR |
| 57 | CAP MDA |
| 56 | CASSETTE HOUSING |
| 55 | LOADING MDA |
| 54 | |
| 53 | |
| 52 | |
| 51 | DECK TERMINAL |
| 50 | |
| | |
| 43 | PRE/REC AMP |
| 41 | UPPER DRUM |
| | |
| | |
| 28 | |
| 27 | |
| 26 | |
| 25 | |
| 24 | |
| 23 | |
| 22 | |
| 21 | TIMER/DISPLAY/SW |
| 20 | |
| 19 | |
| 18 | |
| 17 | |
| 15 | |
| 14 | |
| 13 | |
| 12 | AUDIO/CTL HEAD |
| 11 | |
| 10 | |
| 09 | |
| 08 | |
| 07 | TUNER UNIT |
| 06 | |
| 05 | VIDEO UNIT |
| 04 | |
| 03 | MAIN |
| 02 | |
| 01 | SW. REG |

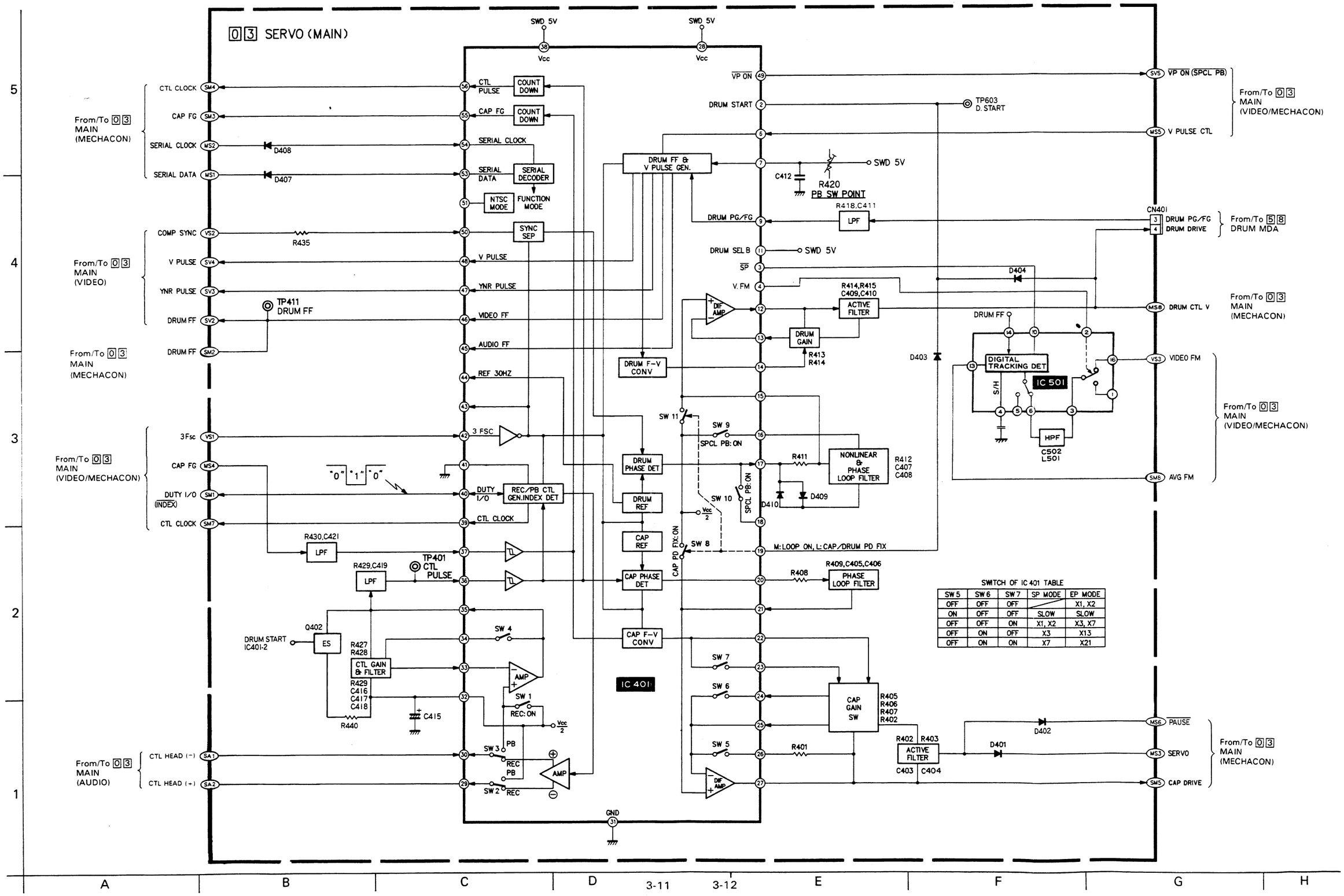
## 3.4 VIDEO BLOCK DIAGRAM



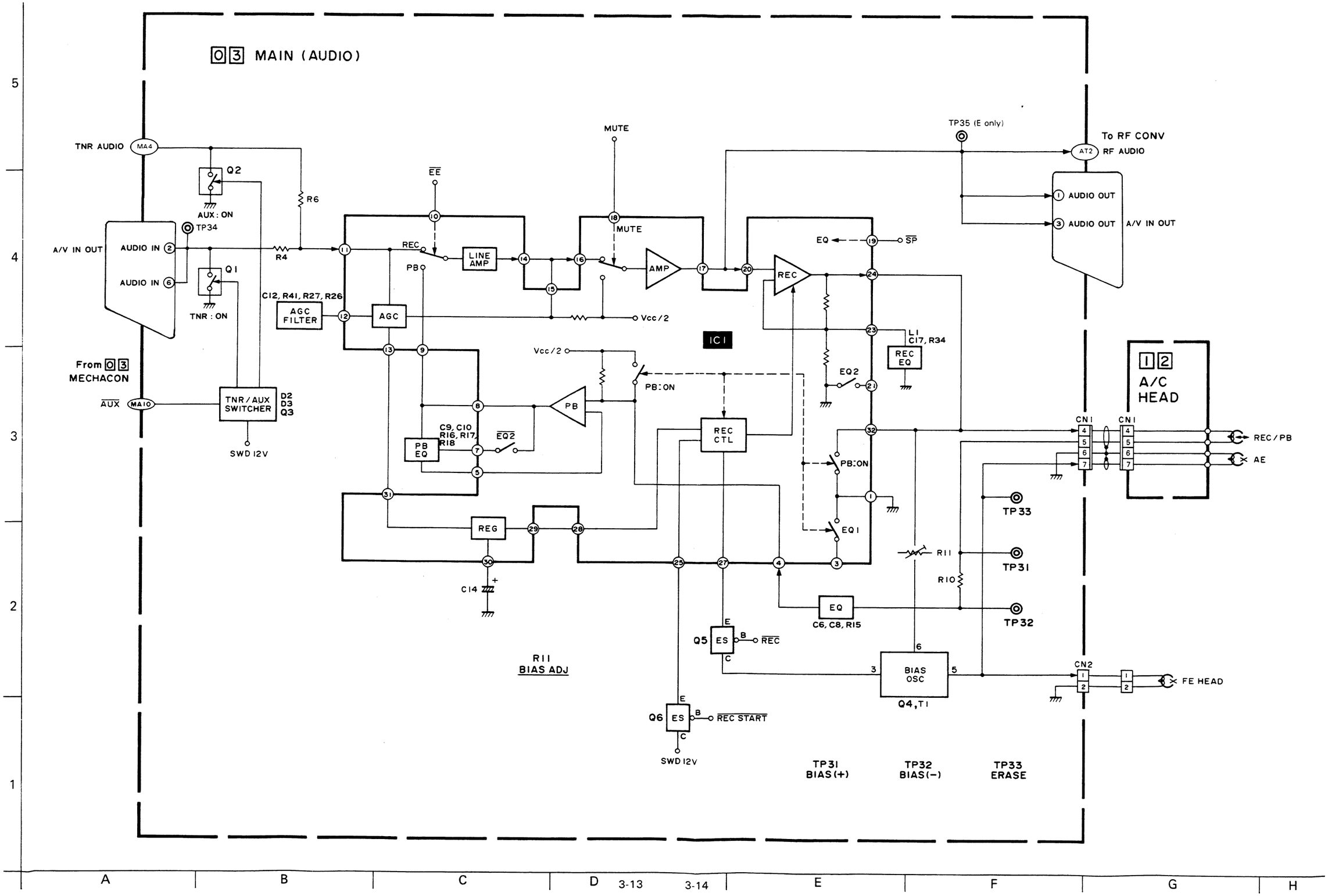
### 3.5 PRE/REC BLOCK DIAGRAM



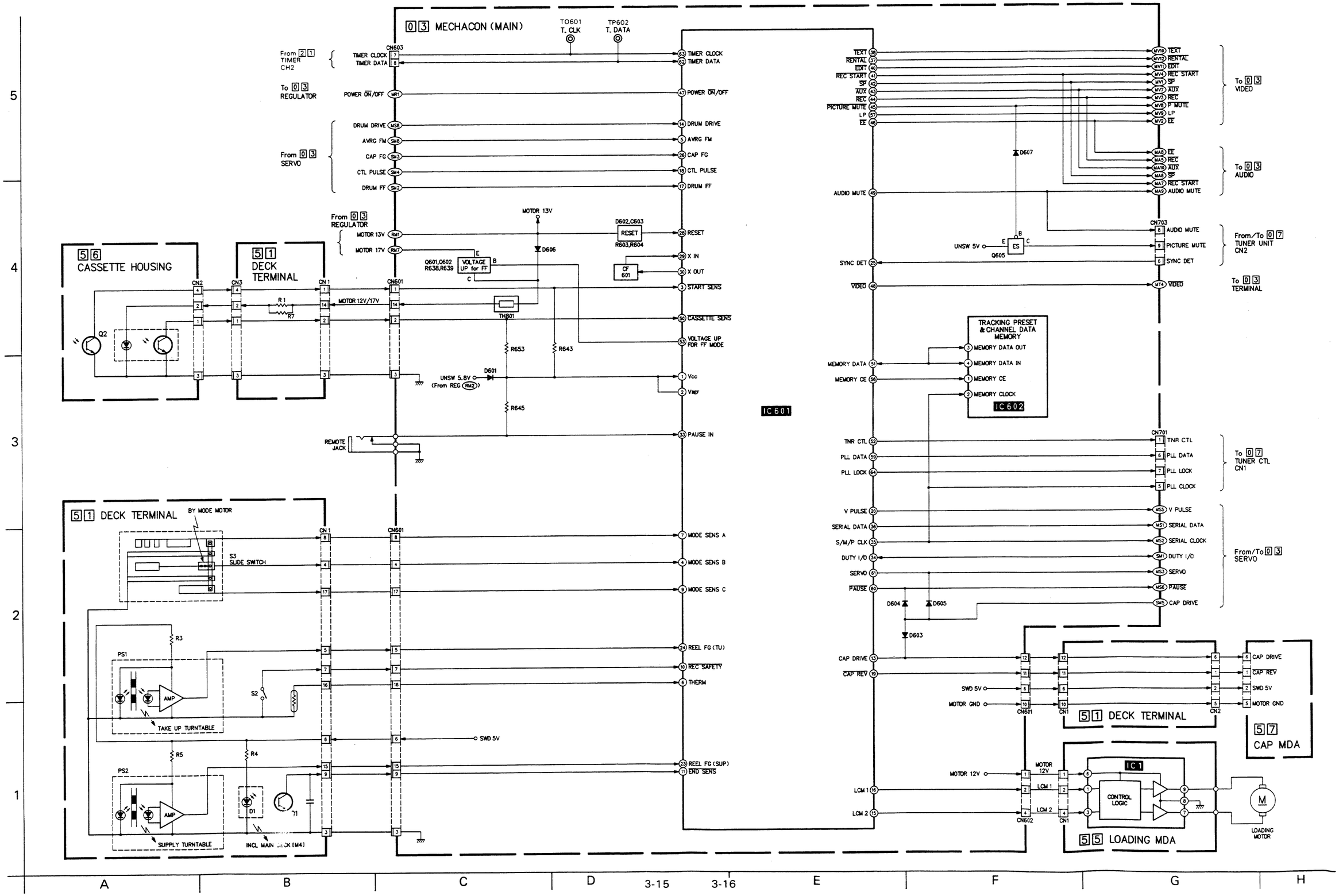
## 3.6 SERVO BLOCK DIAGRAM



### 3.7 AUDIO BLOCK DIAGRAM

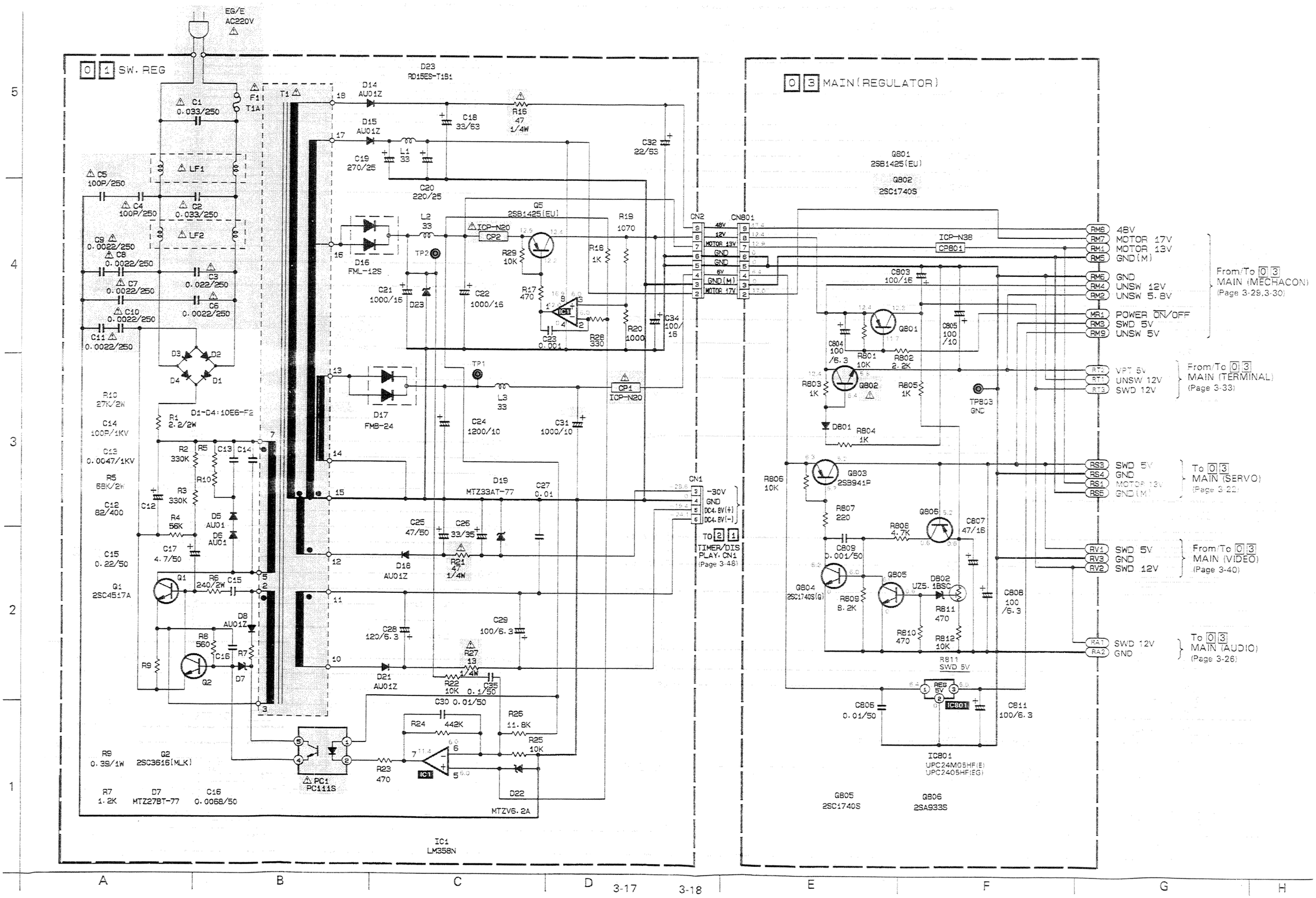


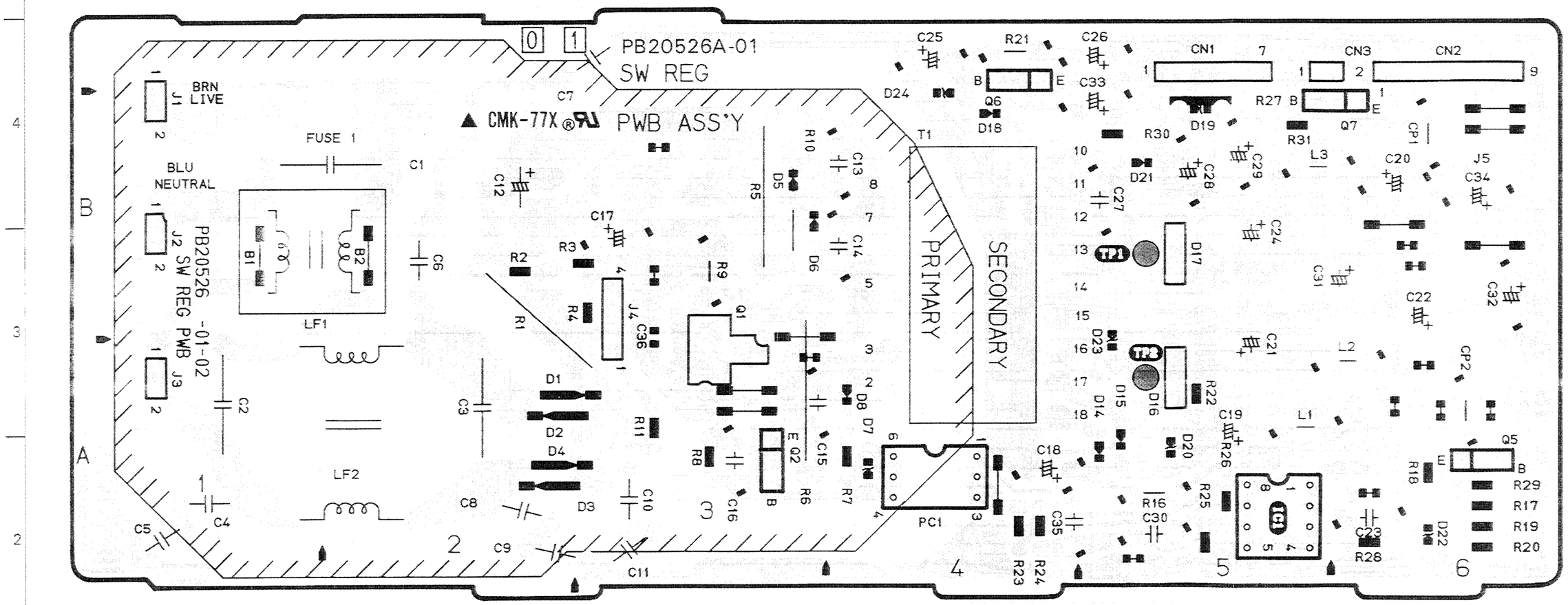
## 3.8 SYSTEM CTL BLOCK DIAGRAM



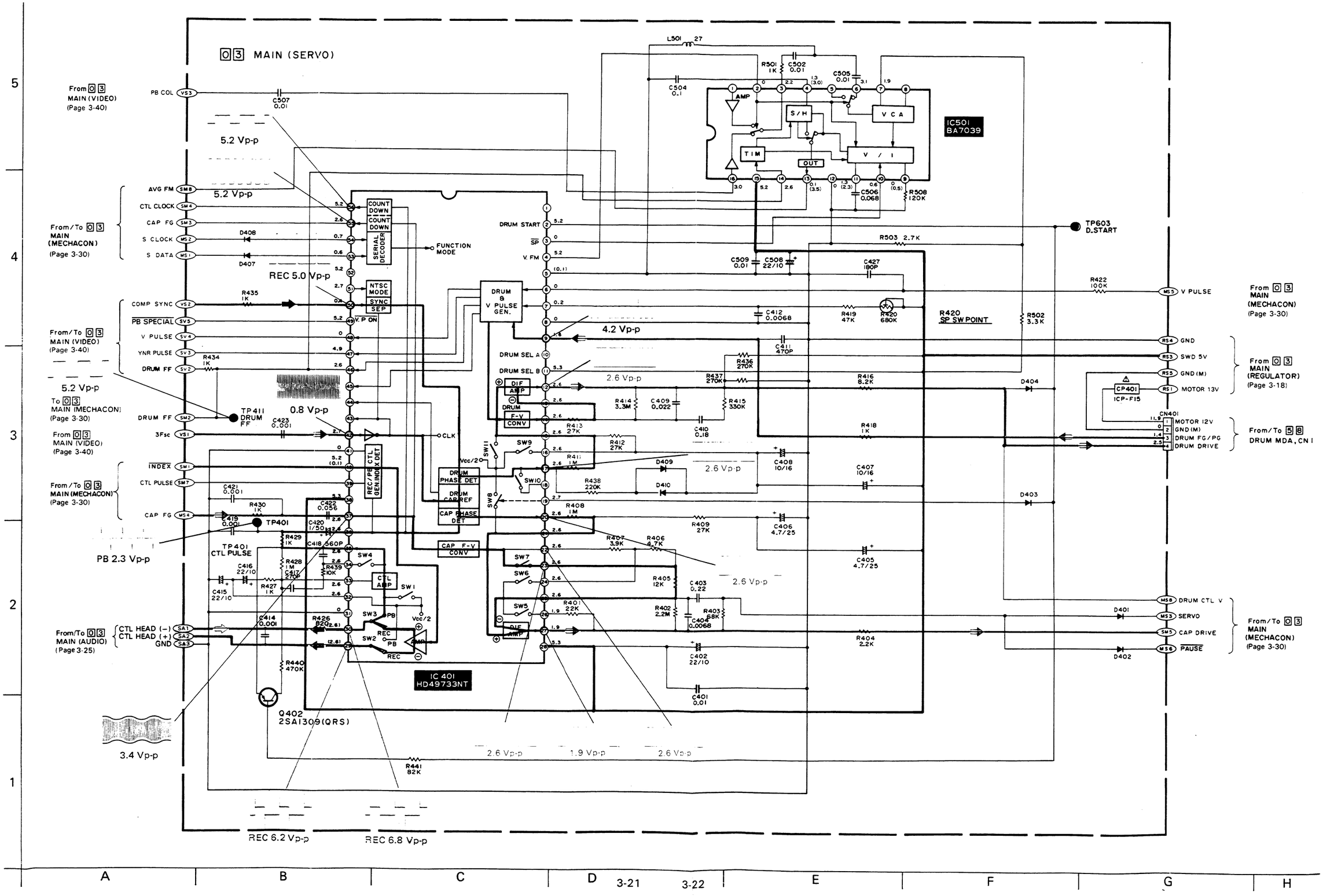

3-15 3-16

## 3.9 SWITCH REGULATOR & REGULATOR (MAIN) SCHEMATIC DIAGRAMS

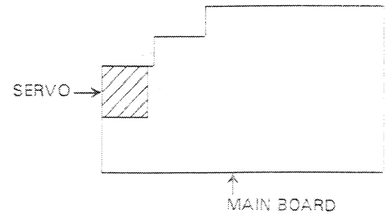



PB20526A-01
SW REG
▲ CMK-77X
PWB ASS'Y
BRN
LIVE
J1
BLU
NEUTRAL
FUSE 1
C1
PB20526
J2 SW REG
-01-02
REG PWB
J3
B1
B2
C6
LF1
LF2
C2
C3
C4
C5
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C33
C34
C35
C36
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
D1
D2
D3
D4
D5
D6
D7
D8
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
Q1
Q2
Q5
Q6
Q7
T1
PC1
J4
J5
L1
L2
L3
CP1
CP2
CN1
CN2
CN3
TP1
PRIMARY
SECONDARY

## 3.11 SERVO SCHEMATIC DIAGRAM



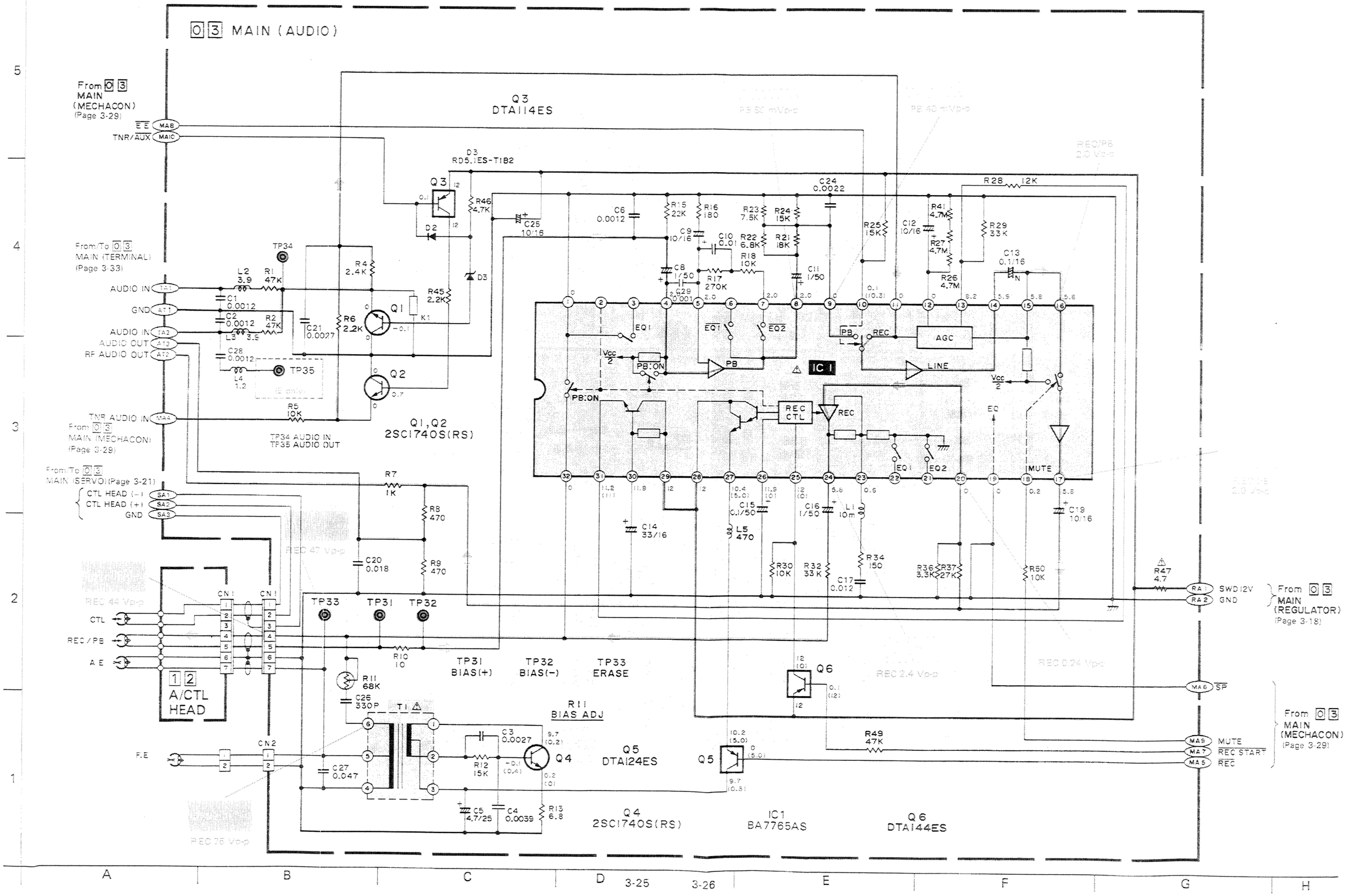
• MAIN board assembly is located in page 37,38

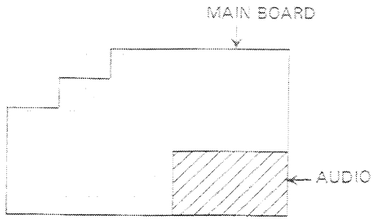



PU36557
MAIN UNIT ASS'Y

R420
SP PB SW POINT

## 3.13 AUDIO SCHEMATIC DIAGRAM



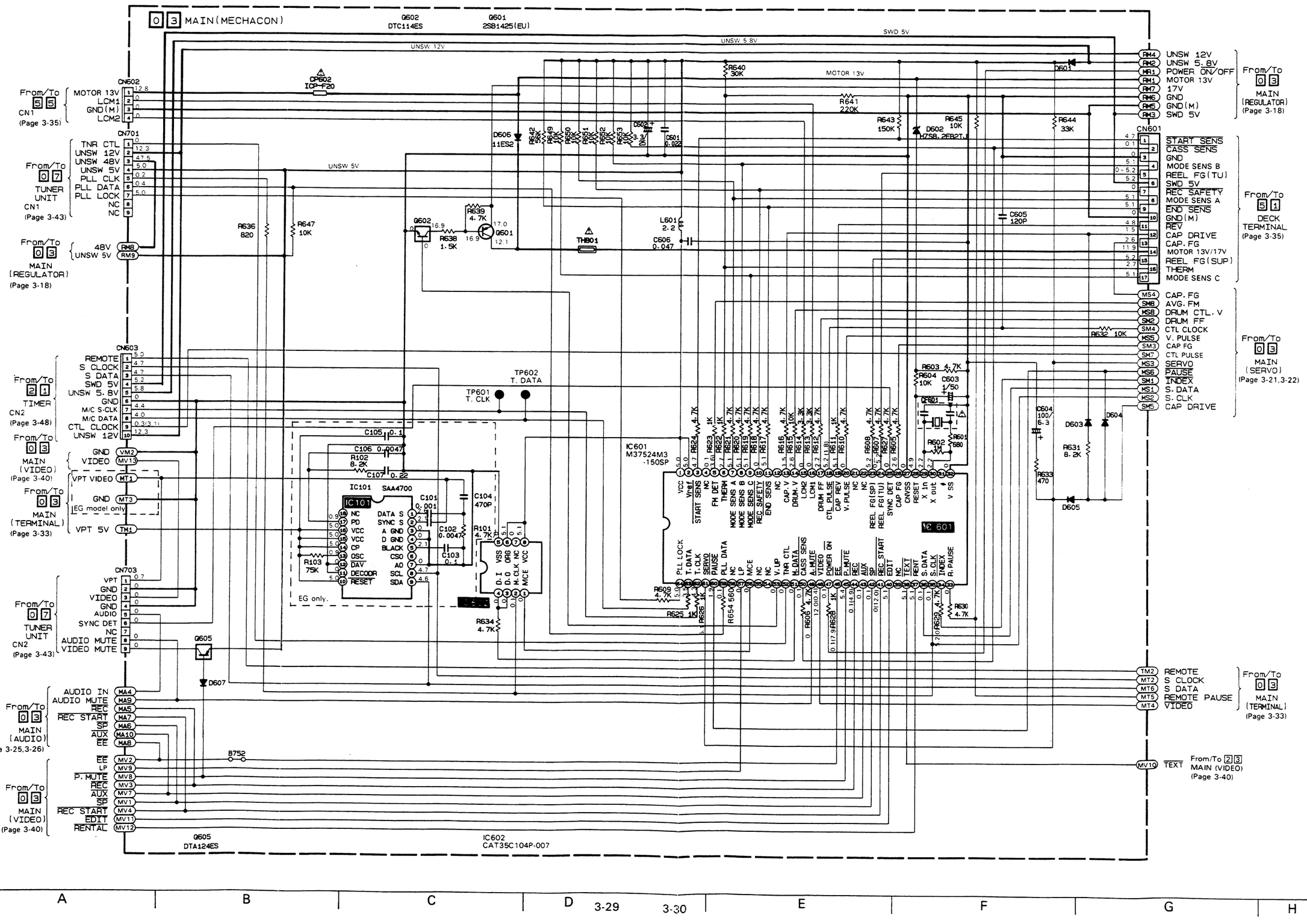



• MAIN board assembly is located in page 37,38

PB10553 -01-03
MAIN PWB

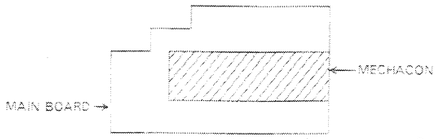
R11
BIAS ADJ

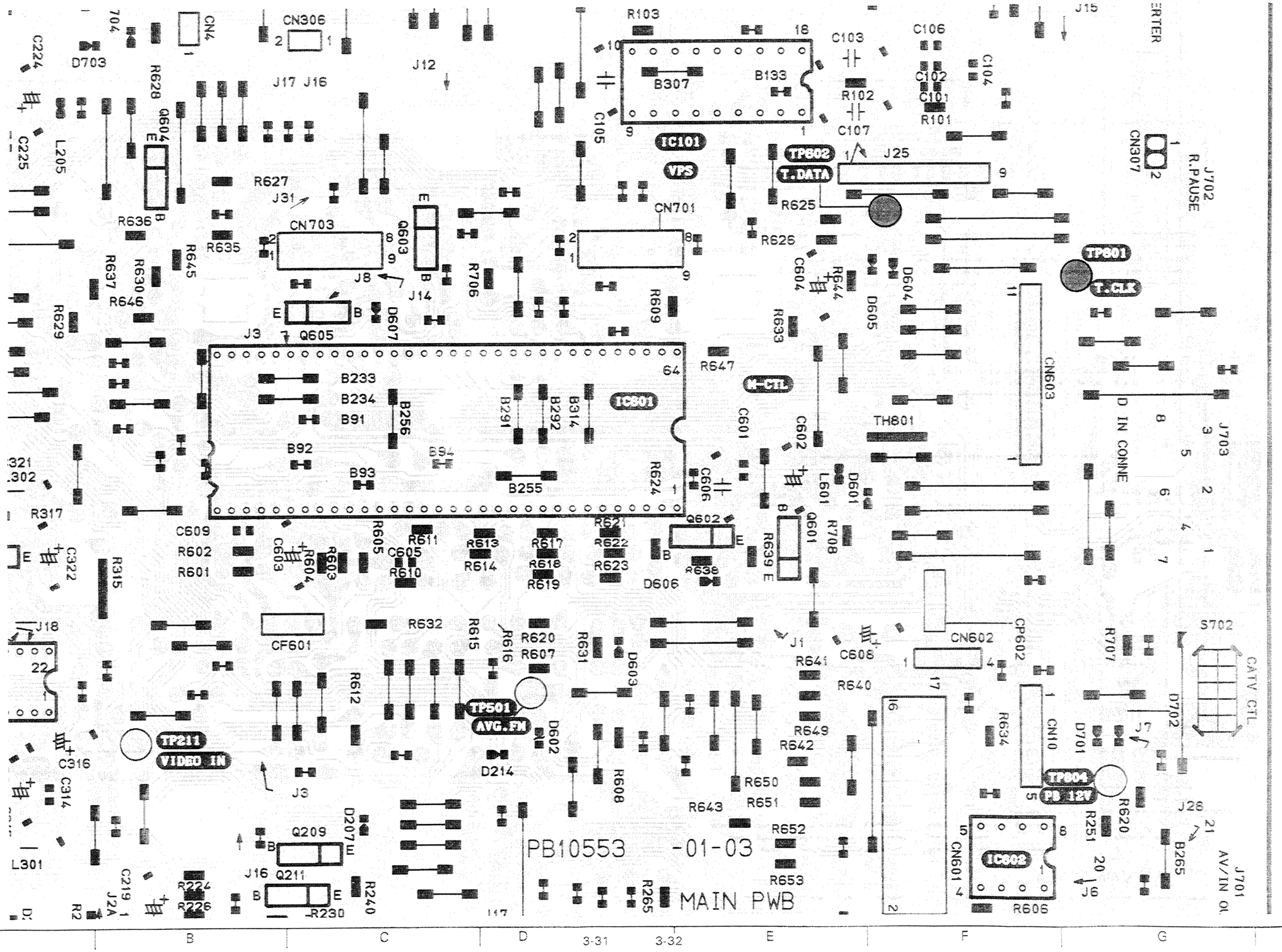
## 3.15 SYSTEM CTL SCHEMATIC DIAGRAM



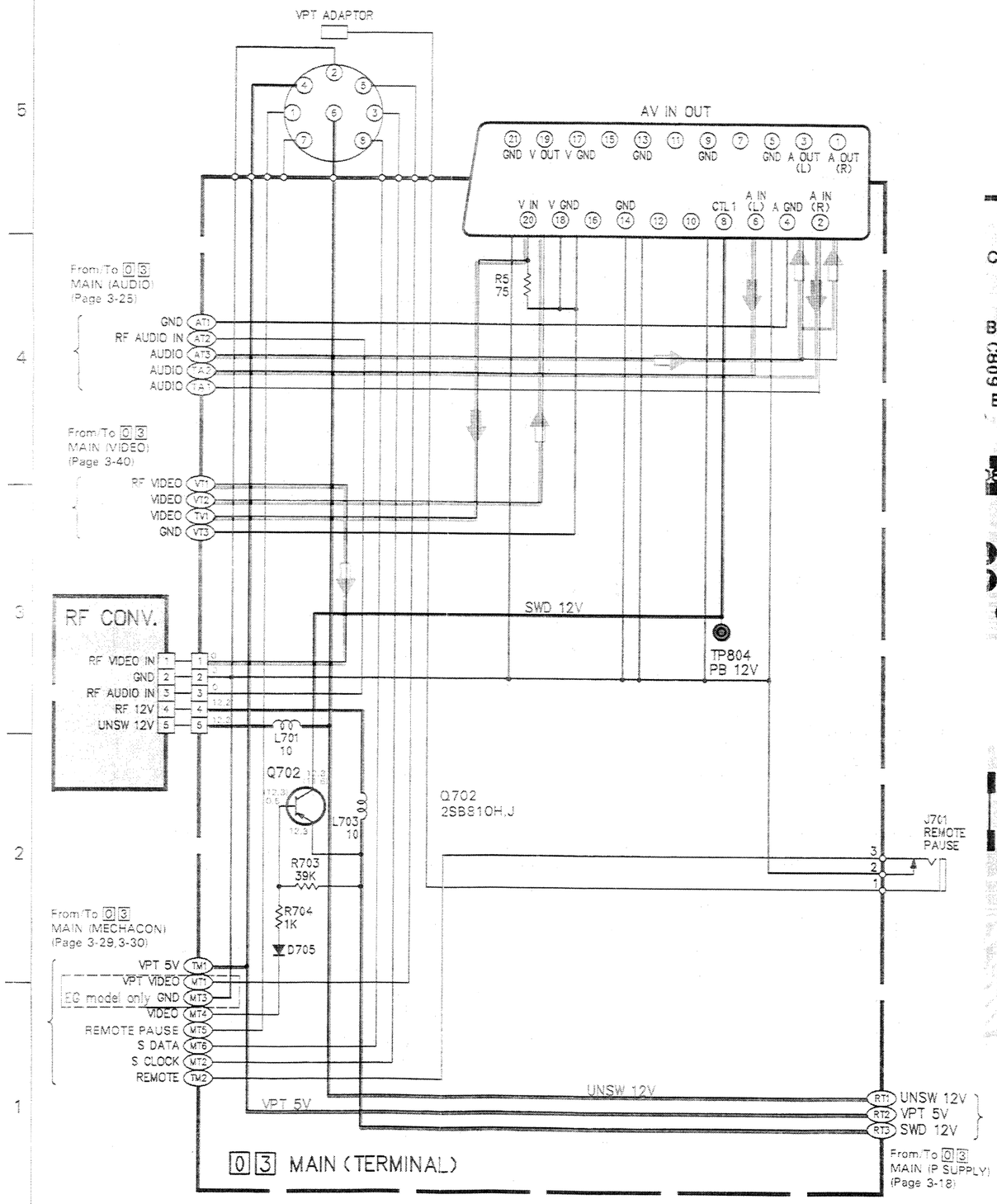
## 3.16 MECHACON (MAIN) CIRCUIT BOARD

• MAIN board assembly is located in page 37,38

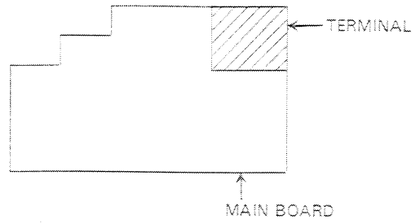


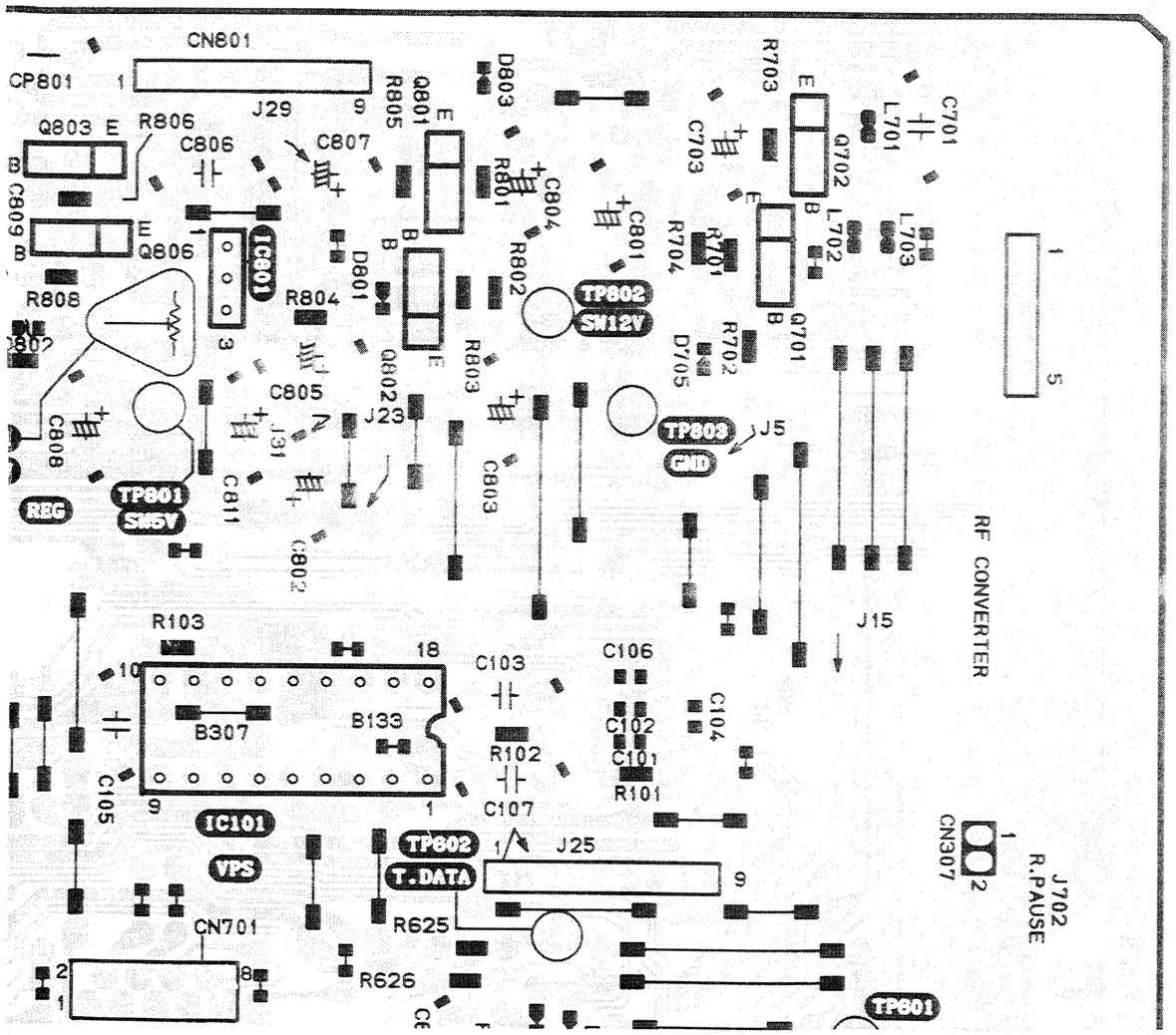
## 3.17 TERMINAL SCHEMATIC DIAGRAM



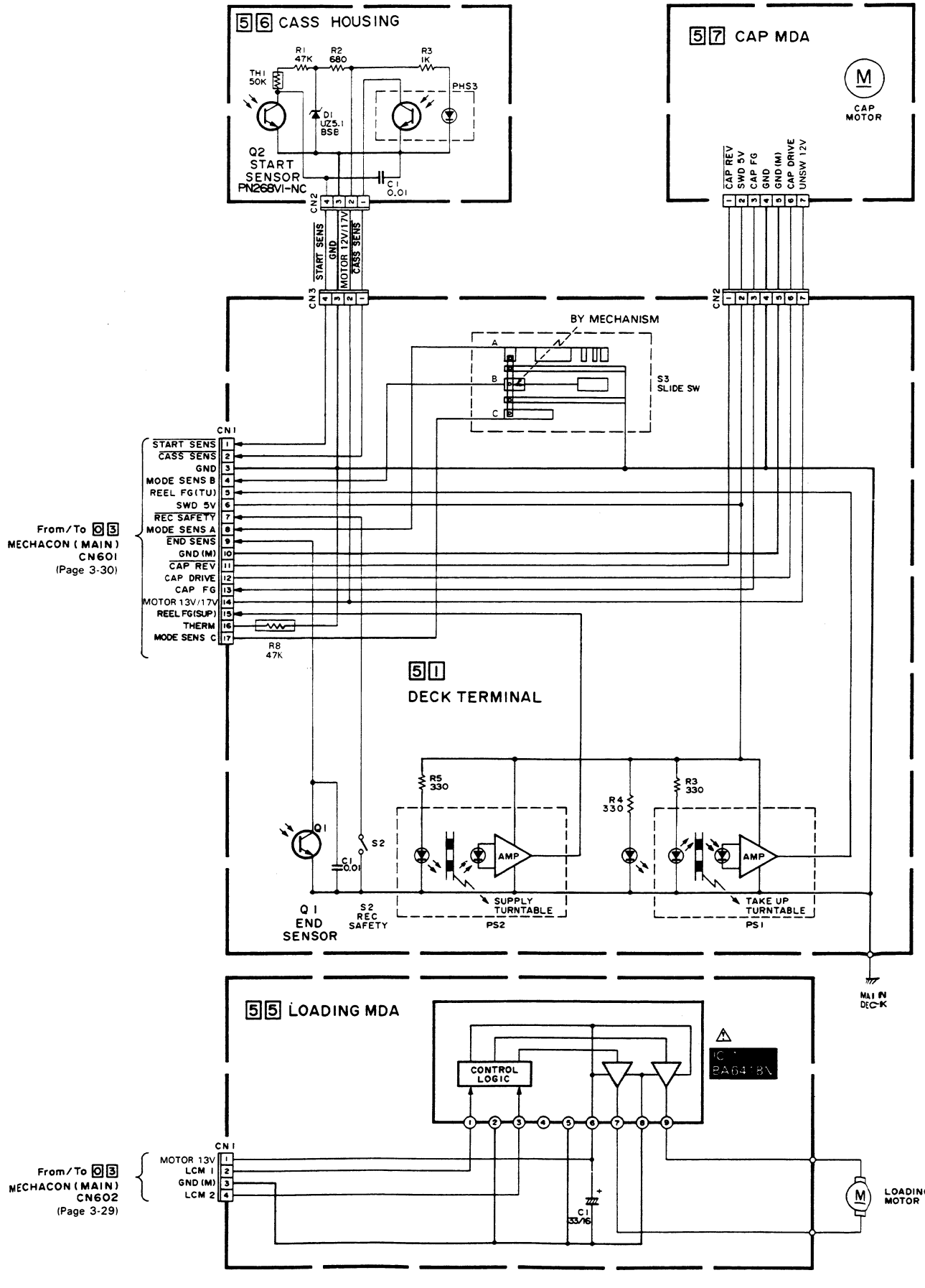

## 3.18 TERMINAL (MAIN) CIRCUIT BOARD



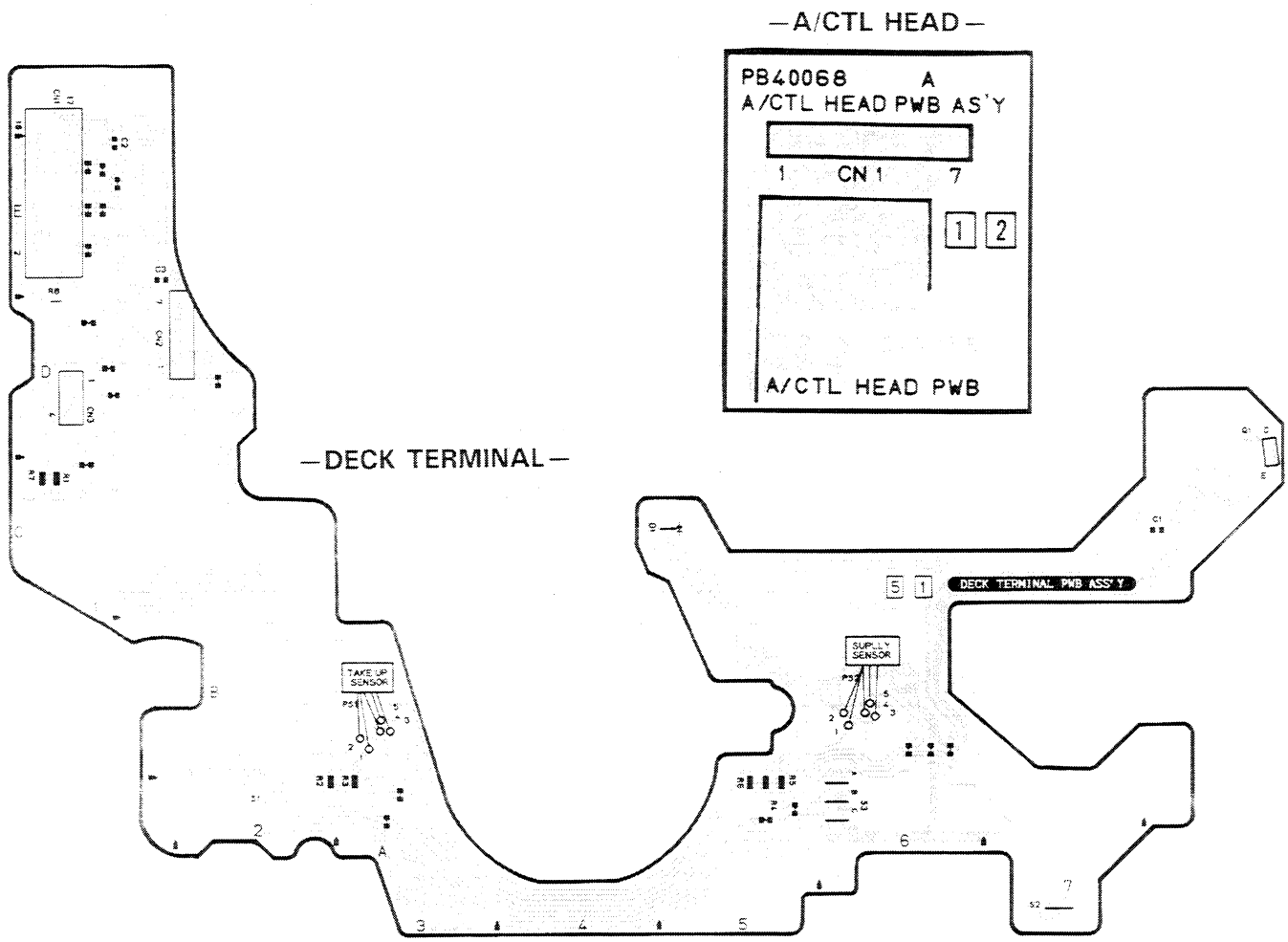

• MAIN board assembly is located in page 37,38

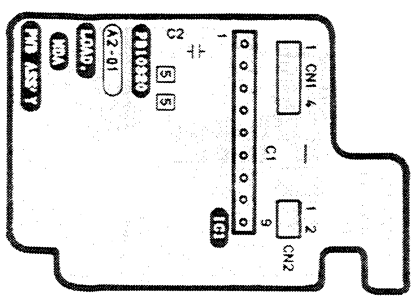


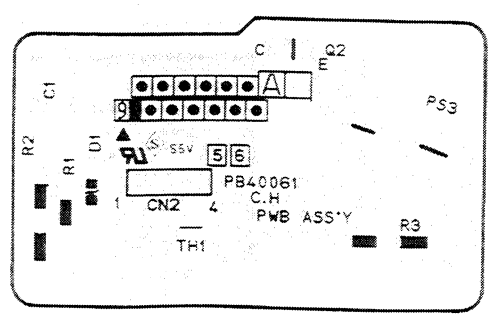
## 3.19 DECK TERMINAL, MODE MOTOR, CAPSTAN MDA AND CASS. HOUSING SCHEMATIC DIAGRAMS



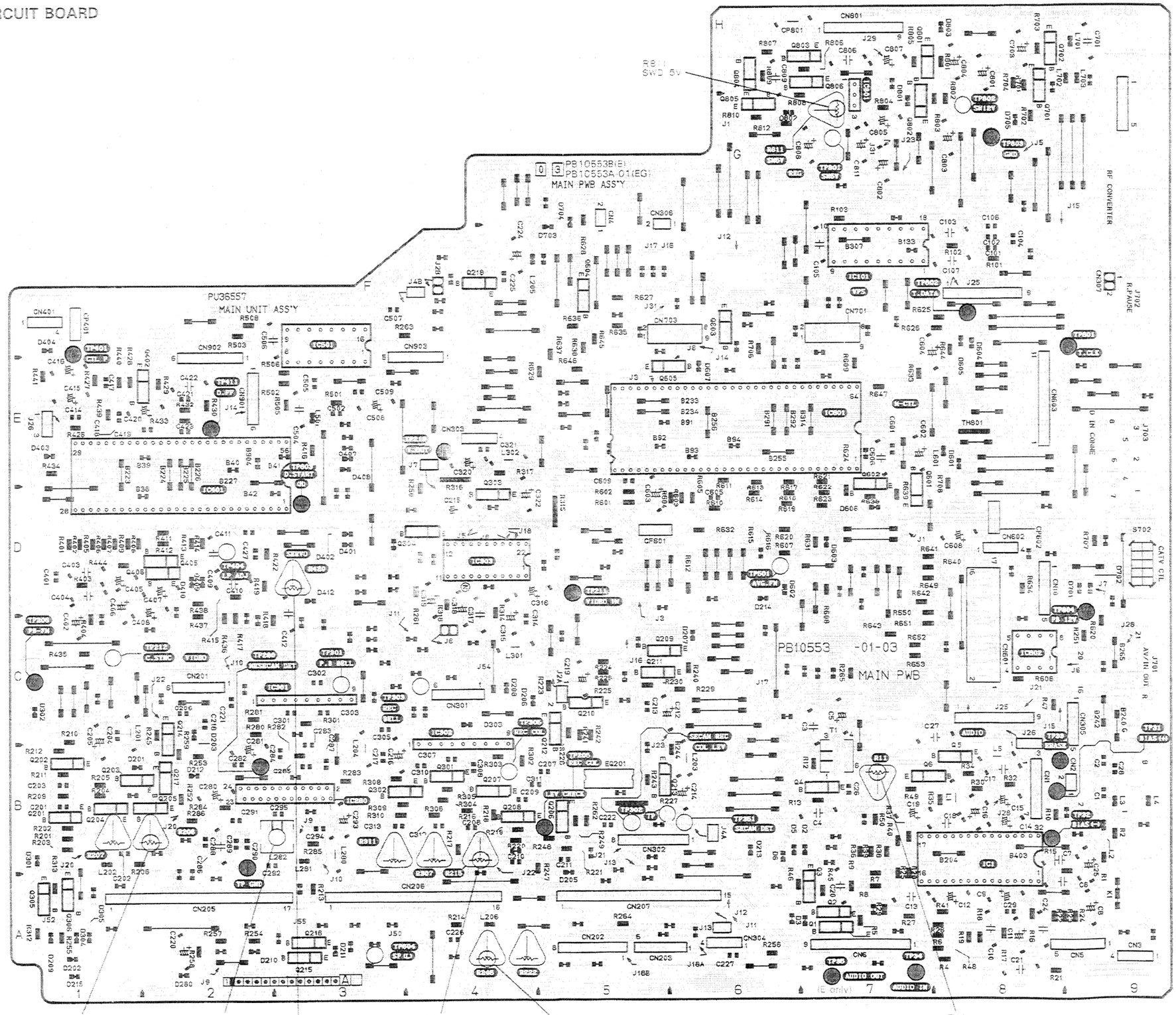
## 3.20 DECK TERMINAL, LOADING MDA, CASS. HOUSING AND A/CTL HEAD CIRCUIT BOARDS



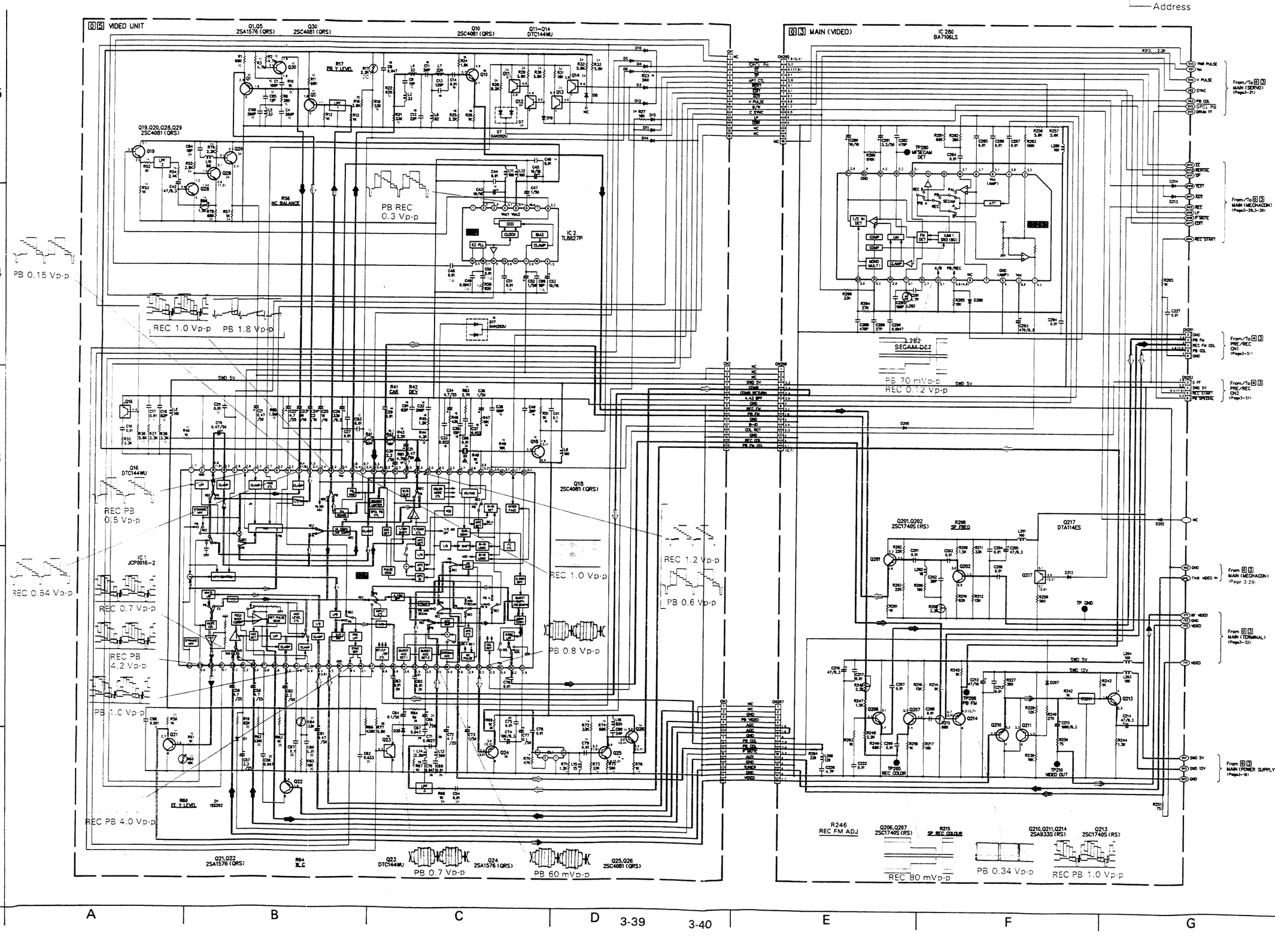



## 3.21 MAIN CIRCUIT BOARD



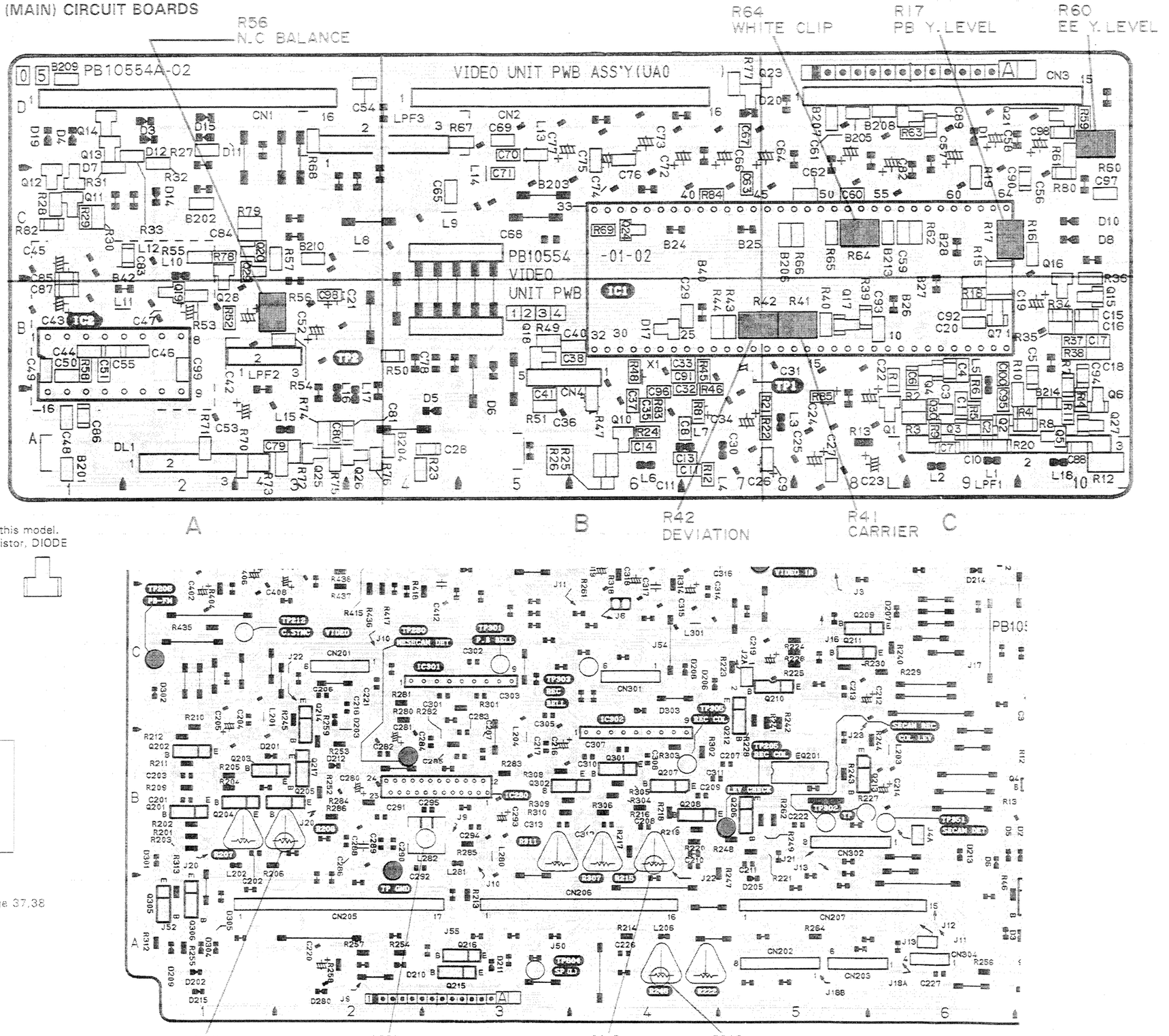
## 3.22 VIDEO UNIT & VIDEO (MAIN) SCHEMATIC DIAGRAMS

• Address of chip parts
1D
└ Address



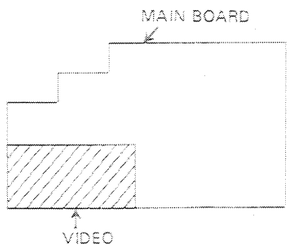
## 3.23 VIDEO UNIT & VIDEO (MAIN) CIRCUIT BOARDS

—VIDEO UNIT—




Note: Double edging indicates not used in this model.
Examples; Resistor, Capacitor, Transistor, DIODE

—VIDEO—

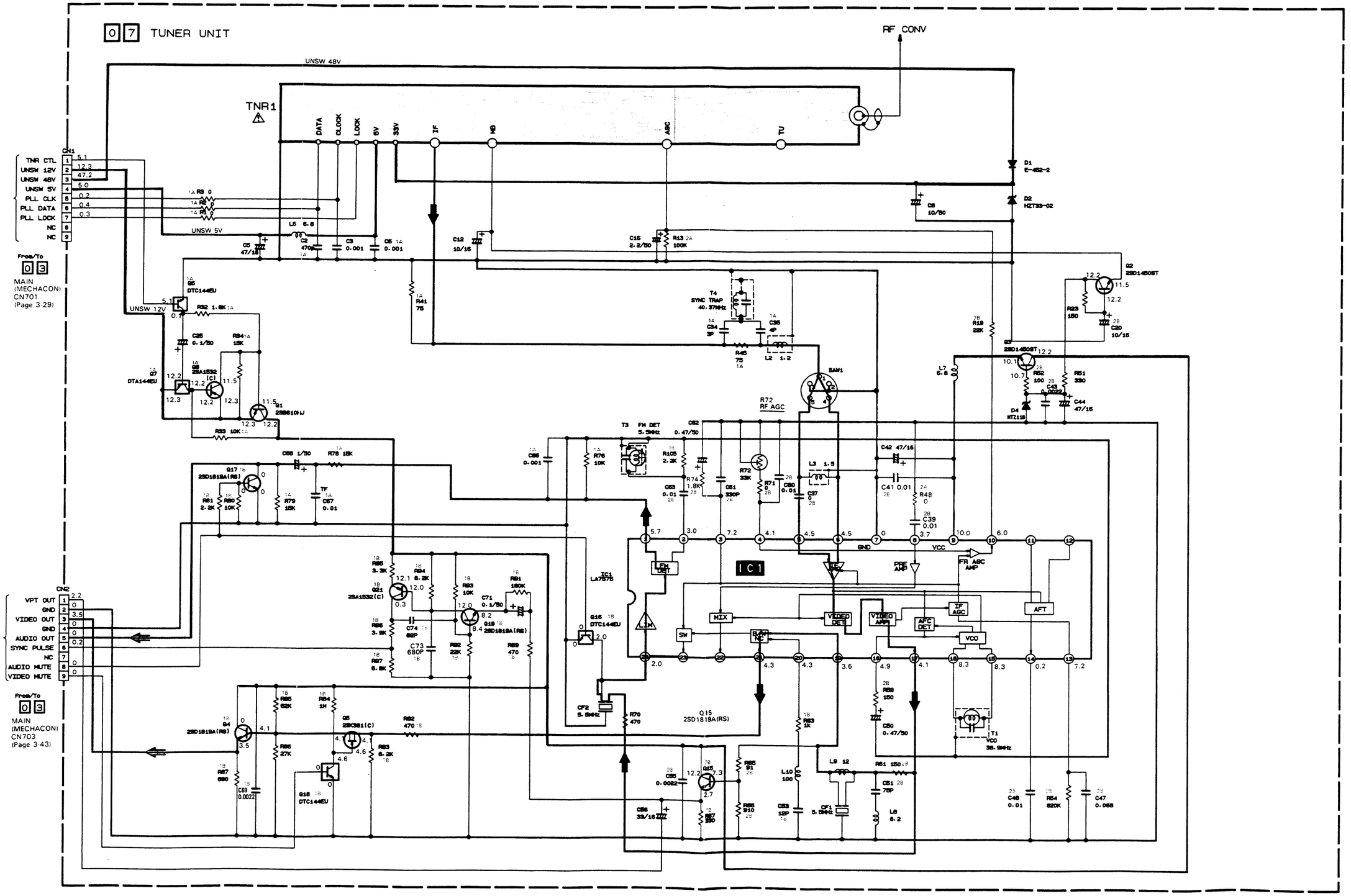



• MAIN board assembly is located in page 37,38

## 3.24 TUNER UNIT SCHEMATIC DIAGRAM

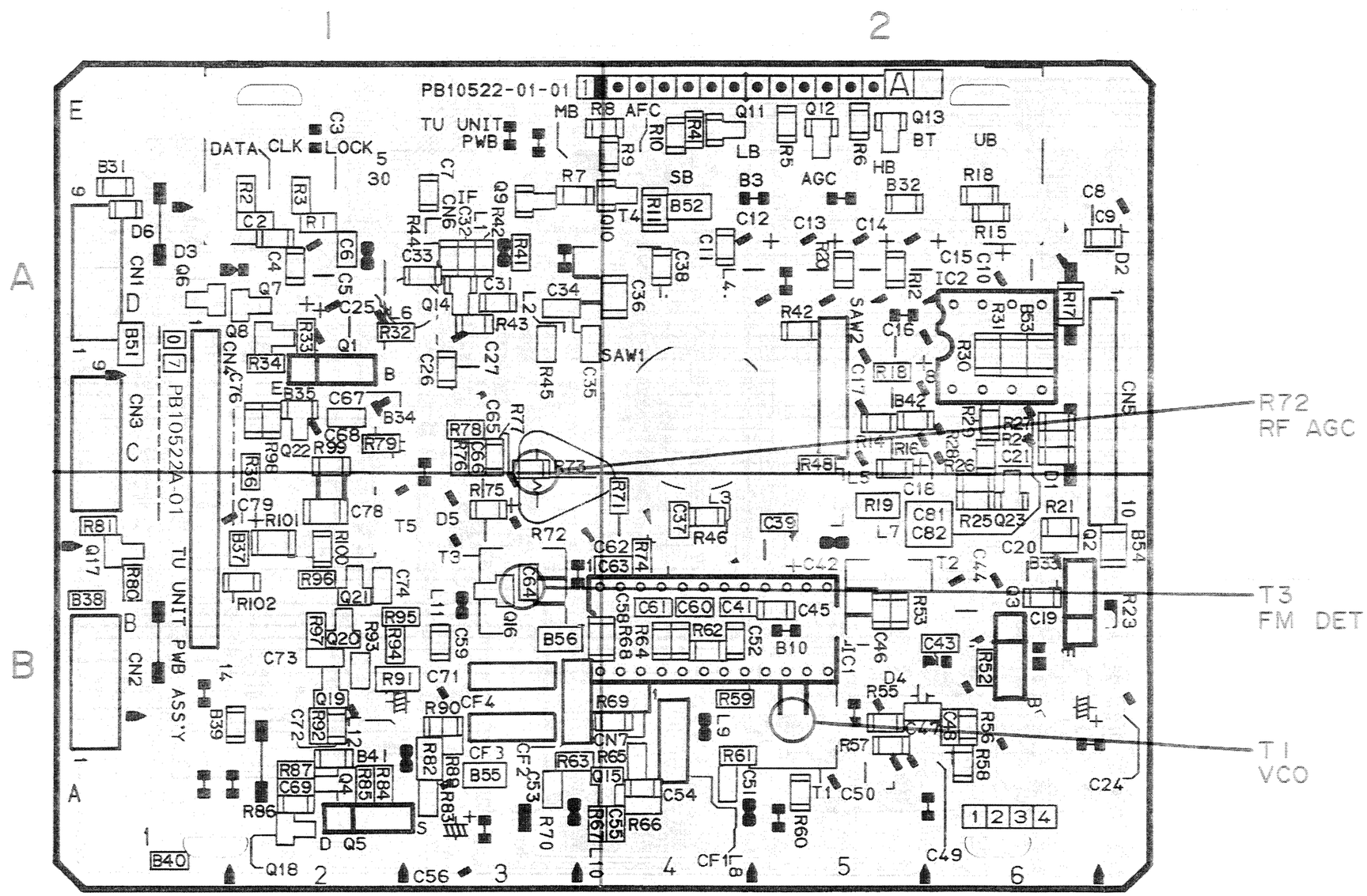
• Address of chip parts
1D
└ Address

**NOTE:** Voltages are DC-measured with a digital voltmeter during stop and tuner mode.



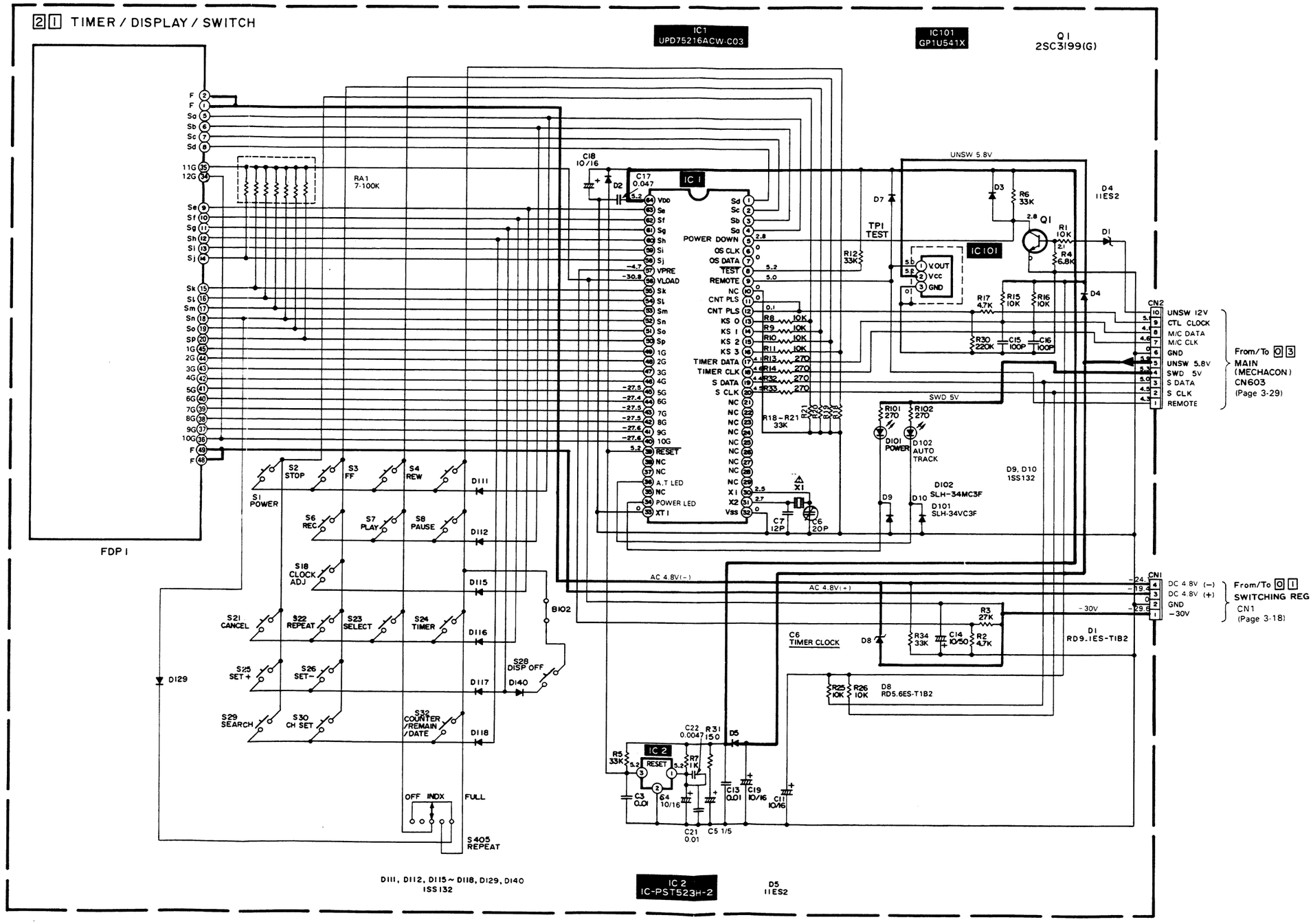

3-43 3-44

3.25 TUNER UNIT CIRCUIT BOARD



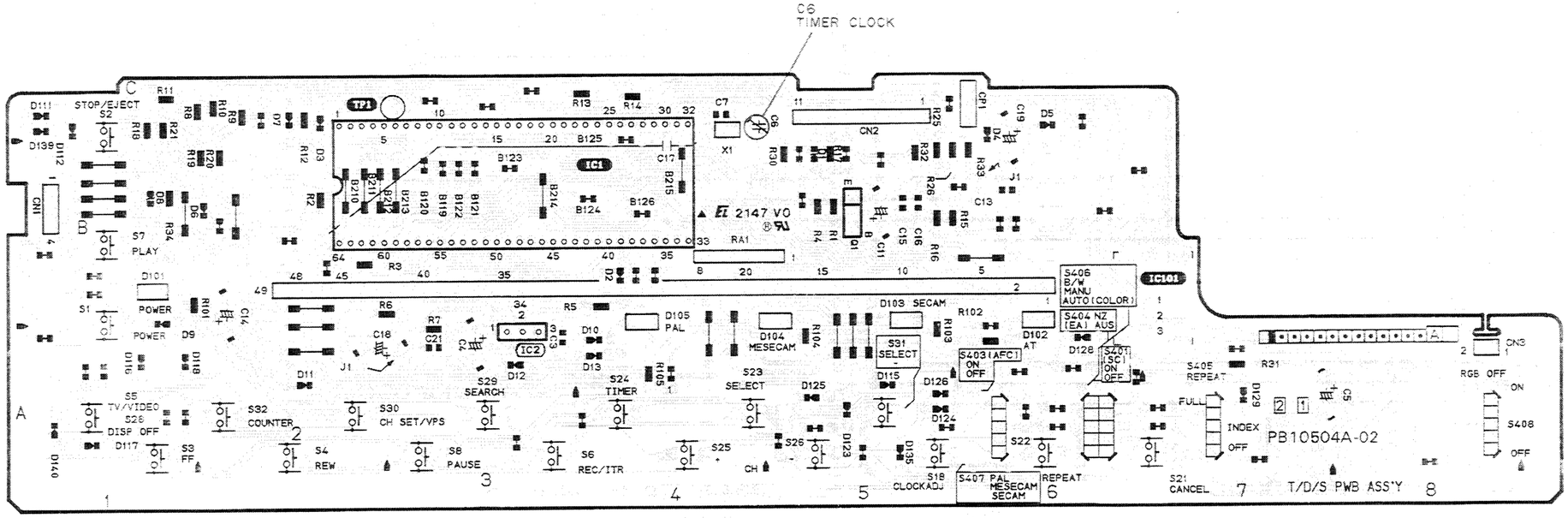

Note: Double edging indicates not used in this model.
Examples; Resistor, Capacitor, Transistor, DIODE

## 3.26 TIMER/DISPLAY/SW SCHEMATIC DIAGRAM

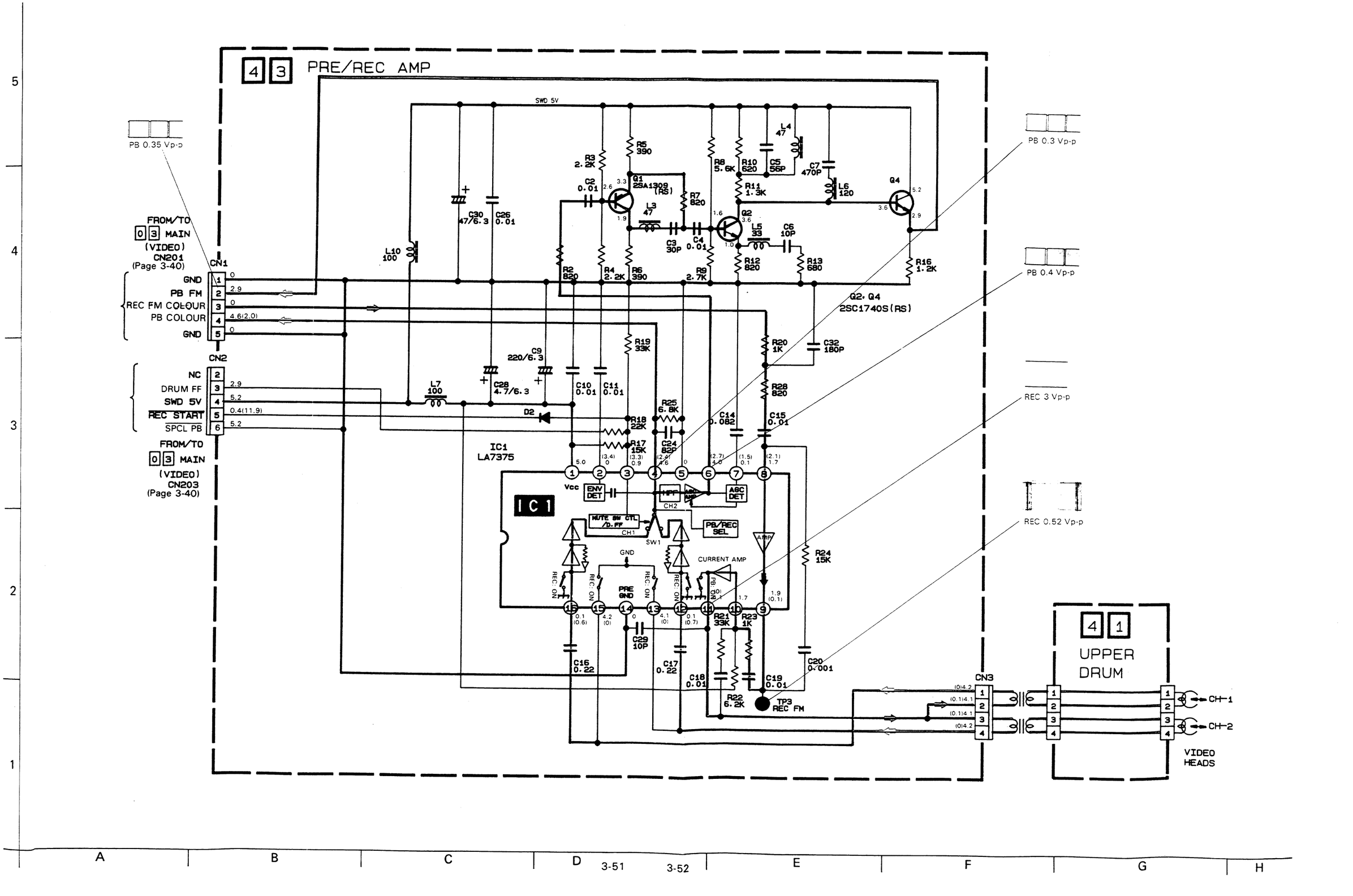


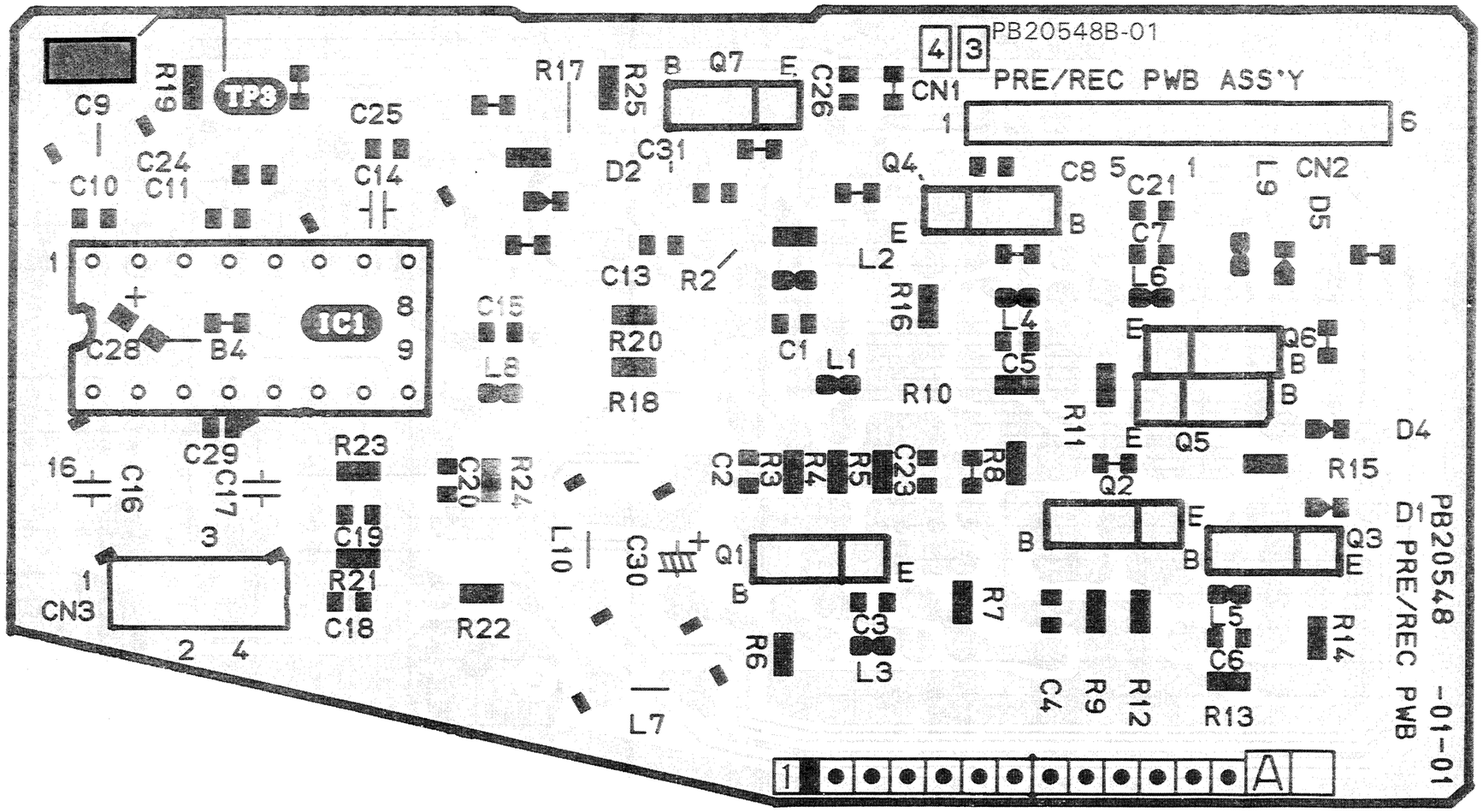

**NOTE:** Voltages are DC-measured with a digital voltmeter during stop and tuner mode.

## 3.27 TIMER/DISPLAY/SW CIRCUIT BOARD



### 3.28 PRE/REC SCHEMATIC DIAGRAM




PB20548B-01
PRE/REC PWB ASS'Y
PB20548 -01-01
D1 PRE/REC PWB
CN1
CN2
CN3
IC1
TP3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
R1
R2
R3
R4
R5
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R7
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R11
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R15
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R19
R20
R21
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R23
R24
R25
C1
C2
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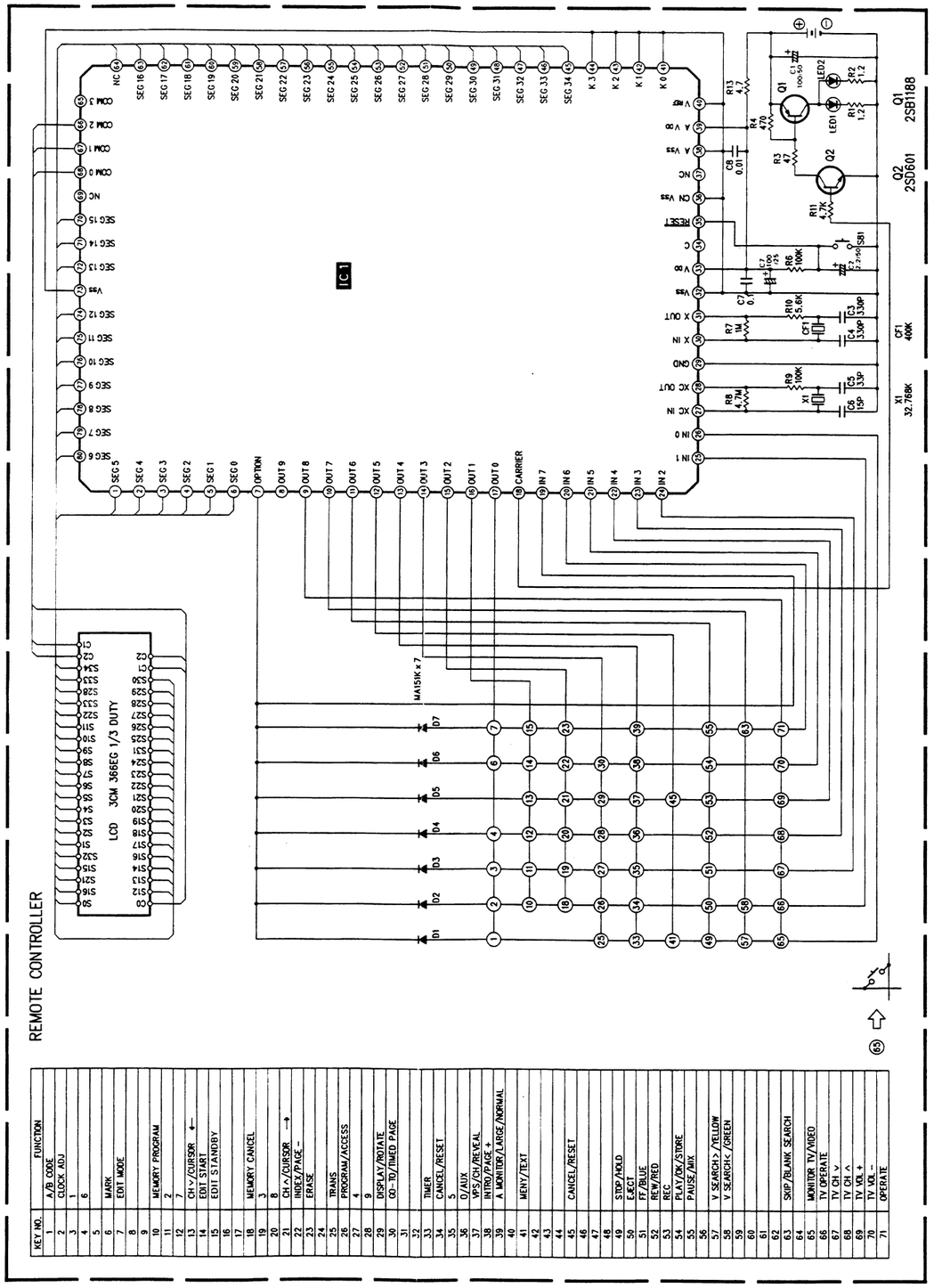
C21
C23
C24
C25
C26
C28
C29
C30
C31
L1
L2
L3
L4
L5
L6
L7
L8
L9
L10
D2
D4
D5
B4

## 3.30 REMOTE CONTROL SCHEMATIC DIAGRAM

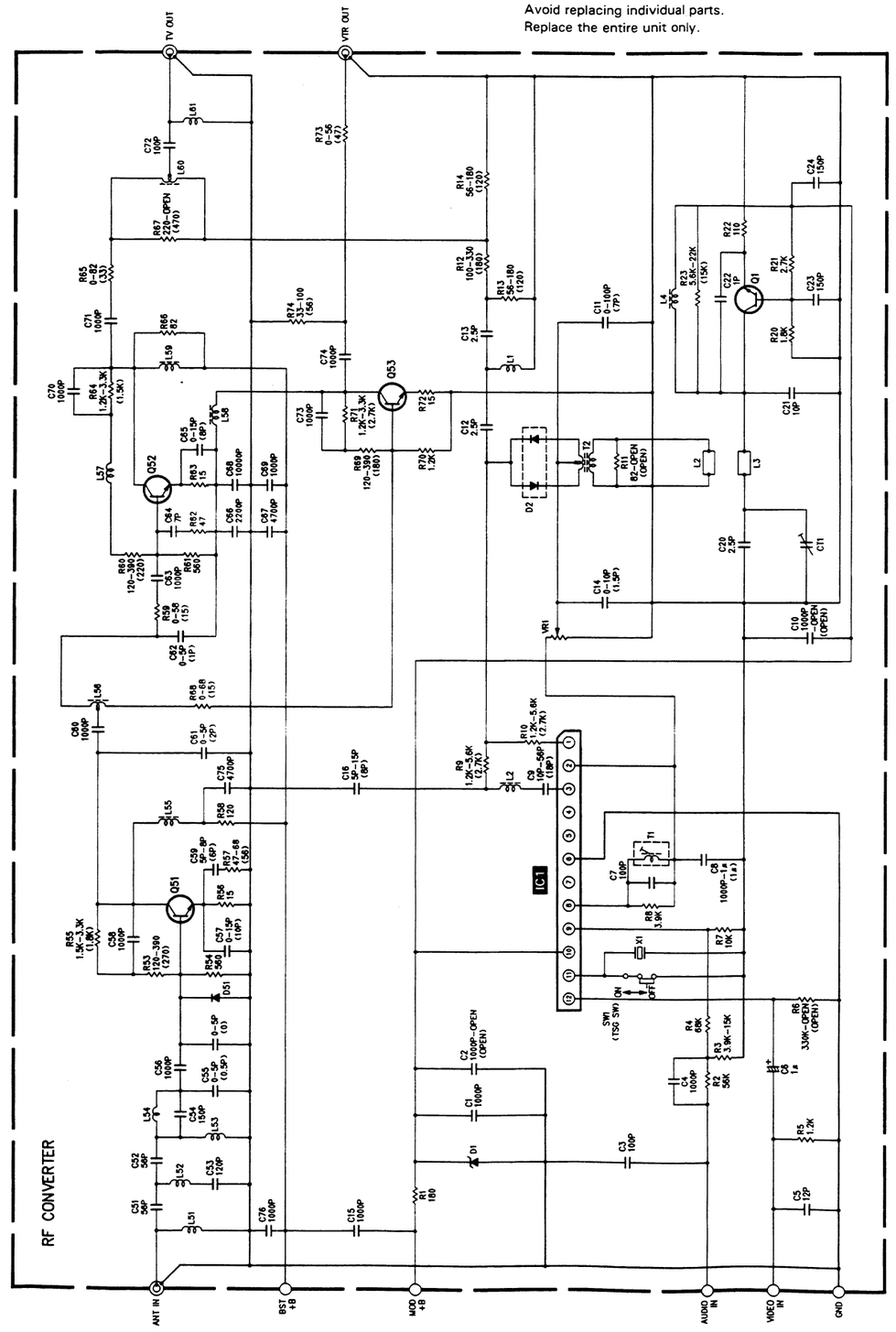
**Note:**
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.




| KEY NO. | A/B CODE | FUNCTION |
|---|---|---|
| 1 | | |
| 2 | CLOCK ADJ | |
| 3 | 1 | |
| 4 | | |
| 5 | 6 | |
| 6 | MARK | |
| 7 | EDIT MODE | |
| 8 | | |
| 9 | | |
| 10 | MEMORY PROGRAM | |
| 11 | 2 | |
| 12 | 7 | |
| 13 | CH ∨/CURSOR ← | |
| 14 | EDIT START | |
| 15 | EDIT STANDBY | |
| 16 | | |
| 17 | | |
| 18 | MEMORY CANCEL | |
| 19 | 3 | |
| 20 | CH ∧/CURSOR → | |
| 21 | INDEX/PAGE+ | |
| 22 | ERASE | |
| 23 | | |
| 24 | | |
| 25 | TRANS | |
| 26 | PROGRAM/ACCESS | |
| 27 | 4 | |
| 28 | 9 | |
| 29 | DISPLAY/ROTATE | |
| 30 | CO-TD/TIMED PAGE | |
| 31 | | |
| 32 | | |
| 33 | TIMER | |
| 34 | CANCEL/RESET | |
| 35 | 5 | |
| 36 | 0/AUX | |
| 37 | WPS/CH.REVEAL | |
| 38 | INTRO/PAGE- | |
| 39 | A.MONITOR/LARGE/NORMAL | |
| 40 | | |
| 41 | MENY/TEXT | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | CANCEL/RESET | |
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | STOP/HOLD | |
| 50 | EJECT | |
| 51 | FF/BLUE | |
| 52 | REW/RED | |
| 53 | REC | |
| 54 | PLAY/OK/STORE | |
| 55 | PAUSE/MIX | |
| 56 | | |
| 57 | V SEARCH> /YELLOW | |
| 58 | V SEARCH< /GREEN | |
| 59 | | |
| 60 | | |
| 61 | | |
| 62 | | |
| 63 | SKIP/BLANK SEARCH | |
| 64 | | |
| 65 | MONITOR TV/VIDEO | |
| 66 | TV OPERATE | |
| 67 | TV CH ∨ | |
| 68 | TV CH ∧ | |
| 69 | TV VOL + | |
| 70 | TV VOL - | |
| 71 | OPERATE | |

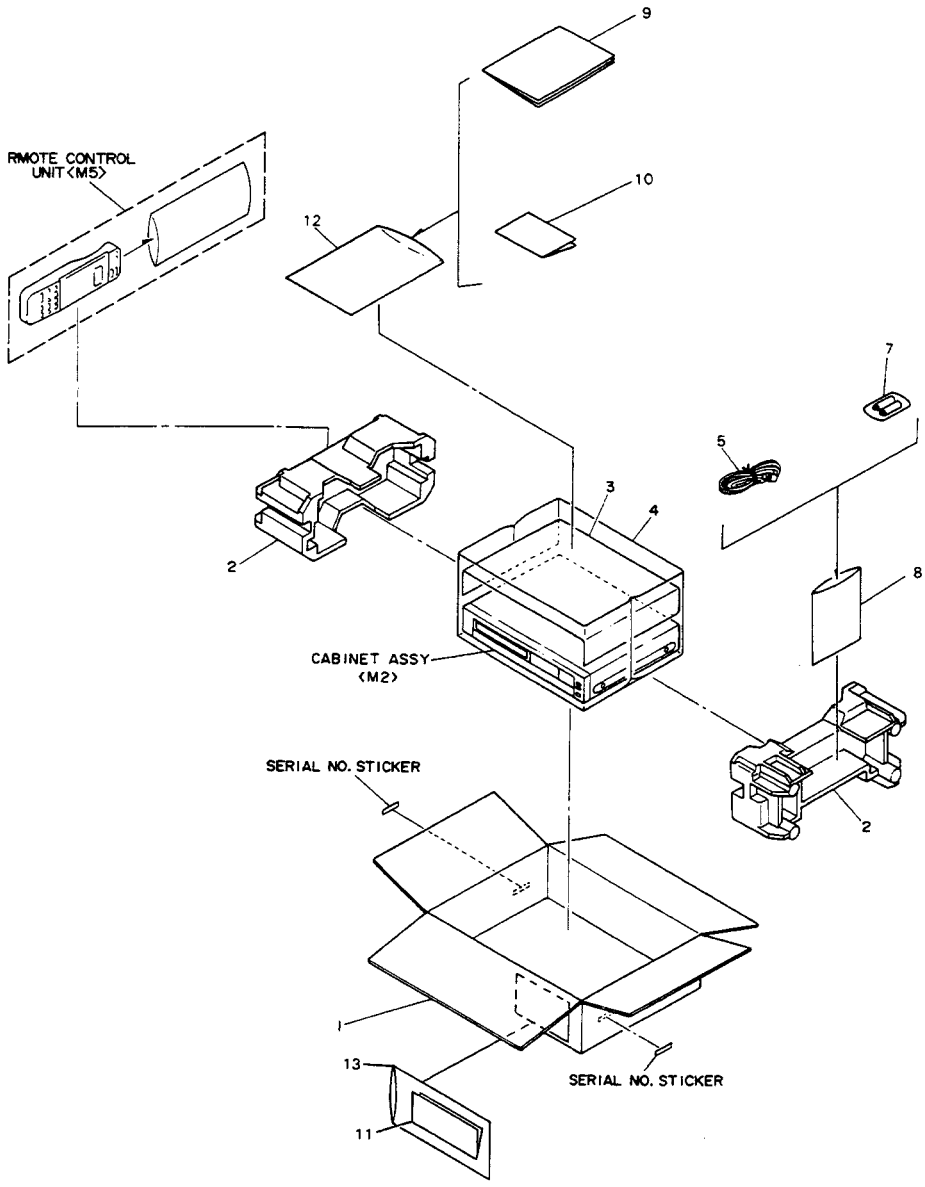
## 3.31 RF CONVERTER SCHEMATIC DIAGRAM

**Note:**
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



# SECTION 4
# EXPLODED VIEWS AND PARTS LIST

## 4.1 PACKING ASSEMBLY <M1>



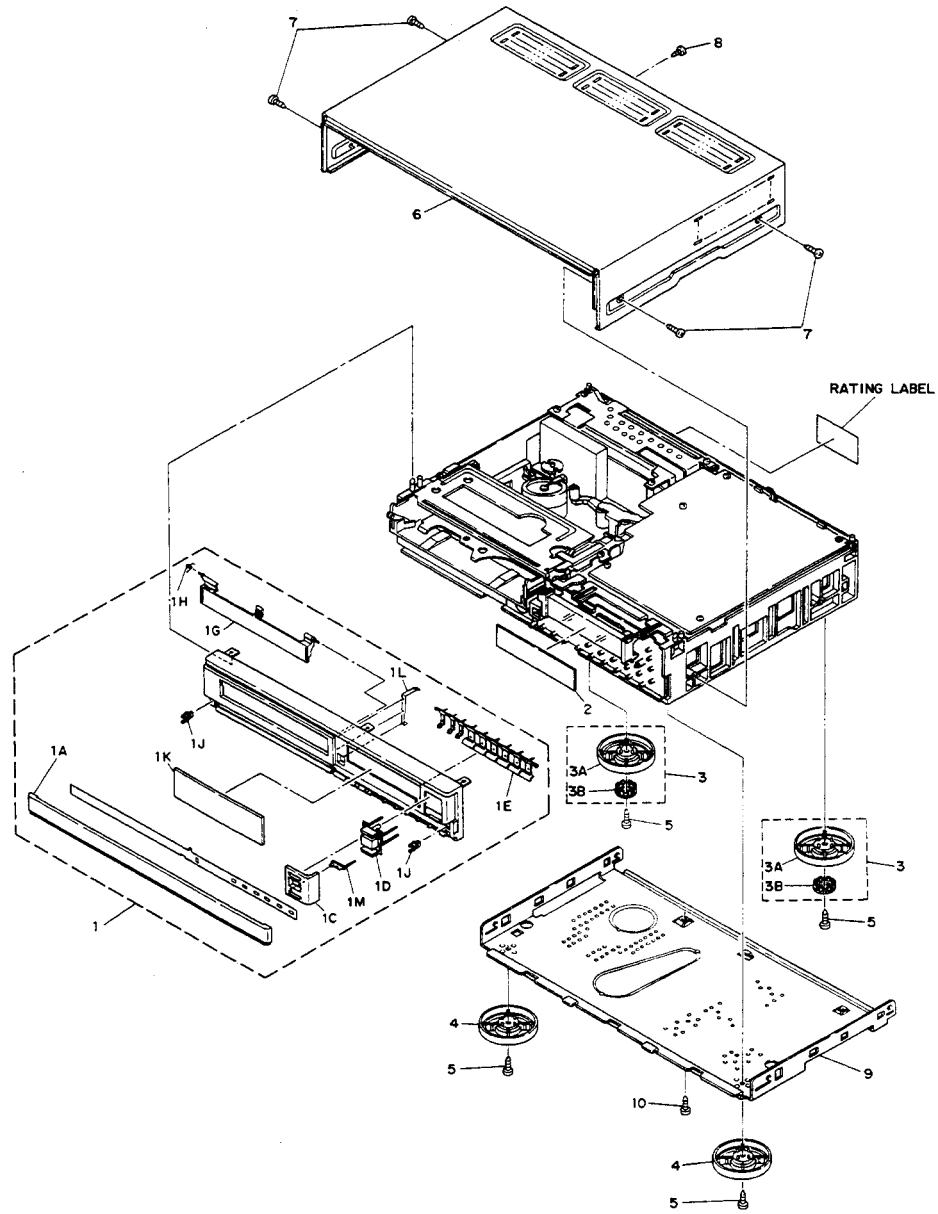

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

**********

### PACKING ASSEMBLY <M1>

| | | |
|---|---|---|
| 1 | PQ33868 | PACKING CASE,EG |
| | PQ33868-2 | PACKING CASE,E |
| 2 | PQ33869A-1 | CUSHION ASSY |
| 3 | PQ41026-8 | PROTECT SHEET |
| 4 | PQM30021-59-11 | POLY BAG |
| 5 | PU59168-3 | RF CABLE |
| | or PU59167-3 | RF CABLE |
| 7 | UM-3DJ2P | BATTERY, x 2 |
| 8 | QPGA020-02005 | POLY BAG |
| ⚠ 9 | PU30425-1213 | INSTRUCTIONS,E |
| ⚠ | PU30425-1206 | INSTRUCTIONS,EG |
| 10 | TCN-3379 | TAPE CATALOG |
| 11 | BT-20114 | WARRANTY CARD,EG |
| 12 | QPGA025-03505 | POLY BAG |
| 13 | PQ33909 | POLY BAG,EG |

## 4.2 CABINET ASSEMBLY <M2>




| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

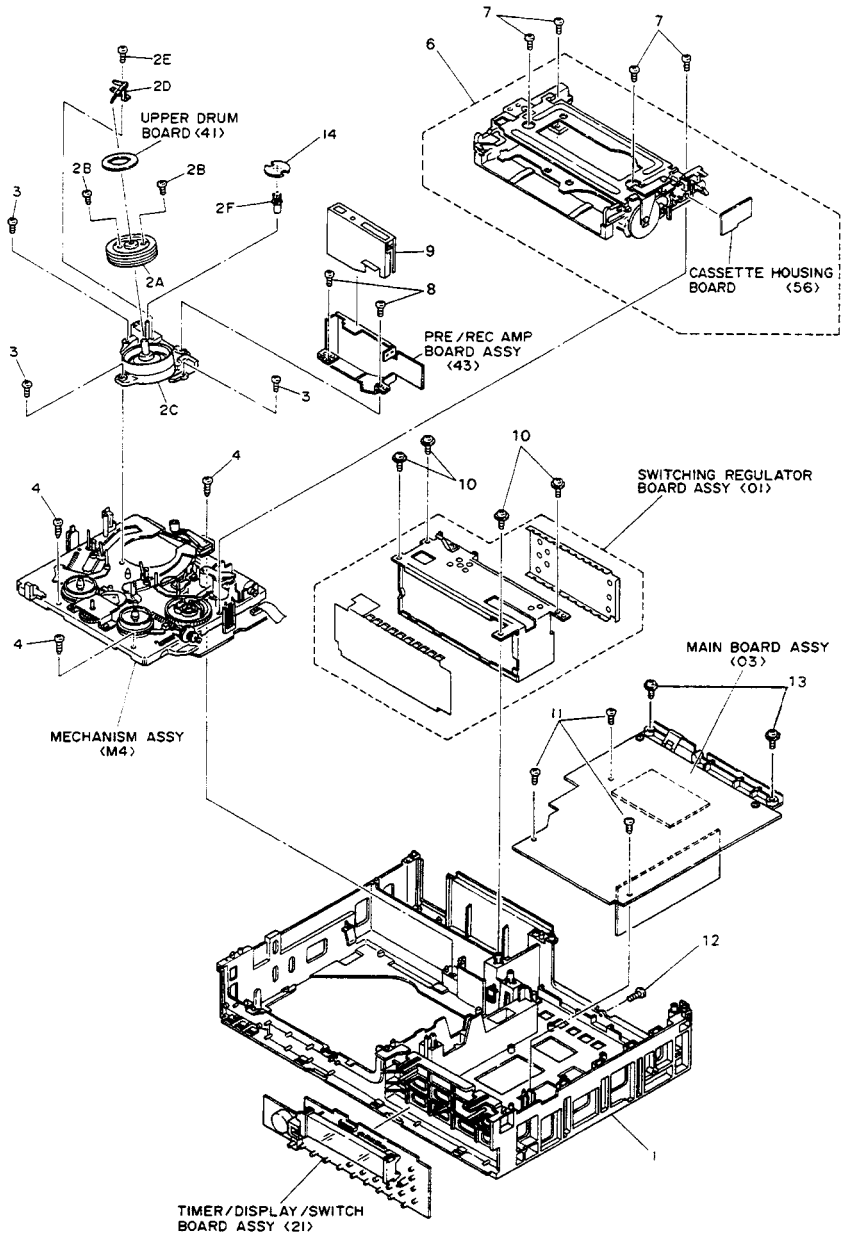
**********

## CABINET ASSEMBLY <M2>

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| ⚠ | 1 | PQ11071B-5 | FRONT PANEL ASSY,EG |
| ⚠ | | PQ11071C-5 | FRONT PANEL ASSY,E |
| | 1A | PQ21128B-3 | DOOR ASSY, EG |
| | | PQ21128C-3 | DOOR ASSY, E |
| | 1C | PQ21213-1-2 | COVER |
| | 1D | PQ21214-1-1 | BUTTON(COVER) |
| | 1E | PQ21126-2 | BUTTON |
| | 1G | PQ21125-2 | CASSETTE DOOR,EG |
| | | PQ21125-3 | CASSETTE DOOR,E |
| | 1H | PQ45165 | TORSION SPRING |
| | 1J | PU60109 | CATCHER, ×2 |
| ⚠ | 1K | PQ33764 | WINDOW |
| | 1L | PQ33911 | PLATE(EARTH) |
| | 1M | PQ45105-1-1 | INDICATOR |
| | 2 | PQ45198 | FILTER(FDP) |
| | 3 | PQ33012D | FOOT ASSY, ×2 |
| | 3A | PQ33013-4 | FOOT(1) |
| | 3B | PQ33014 | FOOT(2) |
| | 4 | PQ33013-4 | FOOT(1), ×2 |
| | 5 | SDSF3010Z | SCREW, ×4 FOR FOOT |
| ⚠ | 6 | PQ11144 | TOP COVER |
| | 7 | PQ43827 | SPECIAL SCREW, ×4 FOR TOP COVER |
| | 8 | SDSF3010M | SCREW,FOR TOP COVER |
| ⚠ | 9 | PQ11145 | BOTTOM COVER |
| | 10 | SDSF3010Z | SCREW,FOR BOTTOM COVER |

## 4.3 CHASSIS ASSEMBLY <M3>

**BEWARE OF BOGUS PARTS**
*Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.*

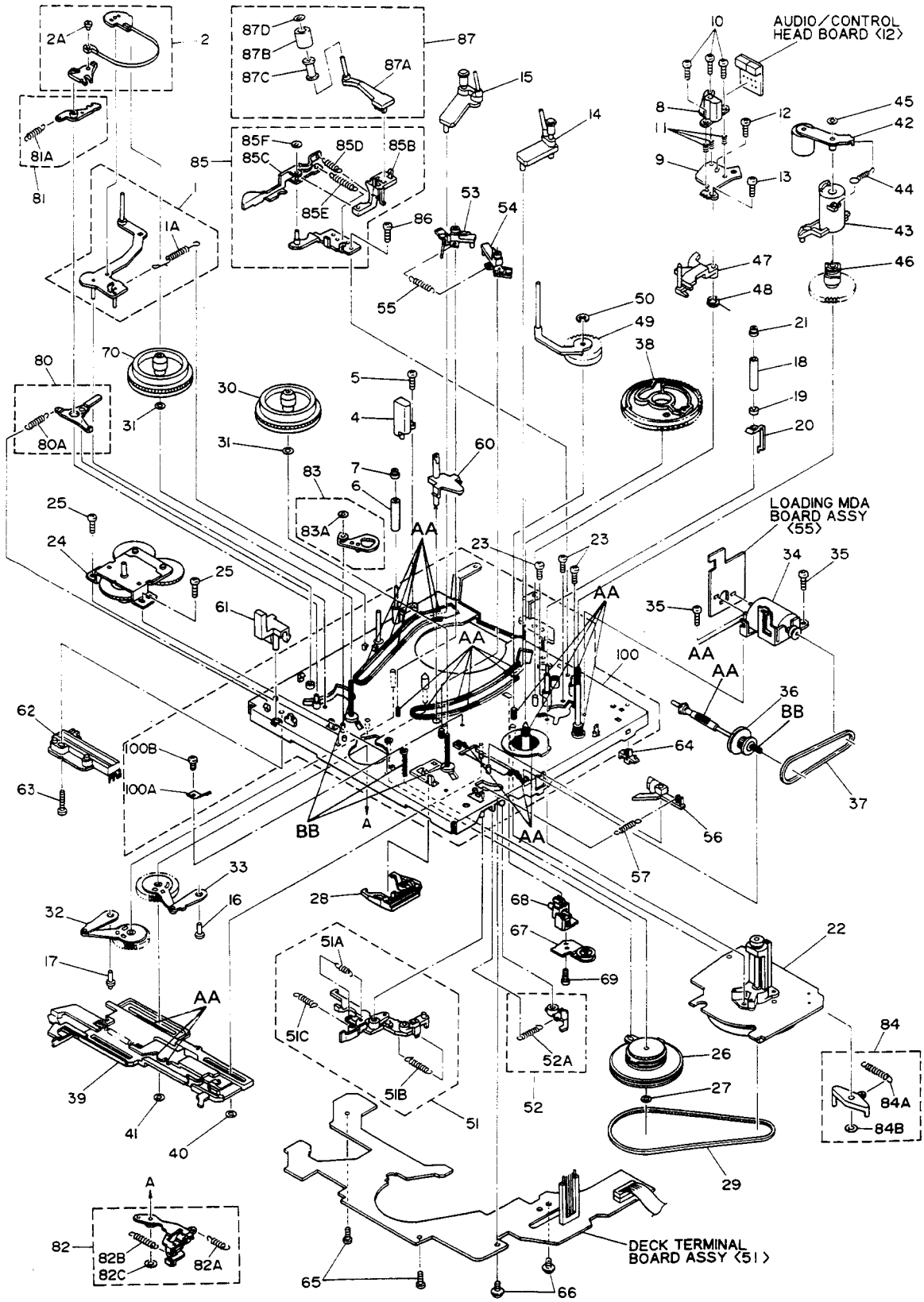



| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

### CHASSIS ASSEMBLY <M3>

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| ⚠ | 1 | PQ11060 | BOTTOM CHASSIS |
| ⚠ | 2A | PDM2008B-5 | UPPER DRUM ASSEMBLY |
| | 2B | PDM4165A | DRUM SCREW ASSEMBLY, ×2 |
| ⚠ | 2C | PDM2138G | LOWER DRUM MOTOR ASSEMBLY |
| | 2D | PDM4229A-1 | BRUSH ASSY |
| | 2E | SPSG2606Z | SCREW,FOR BRUSH ASSEMBLY |
| | 2F | PDM4226A | ROLLER ASSY |
| | 3 | SPST2610Z | SCREW, ×3 FOR DRUM ASSY |
| | or | SDST2610Z | SCREW, ×3 FOR DRUM ASSY |
| | 4 | PQ43831 | SPECIAL SCREW, ×3 FOR MAIN DECK |
| | 6 | PUS29183D-2 | CASSETTE HOUSING ASSY |
| | 7 | SDST2608Z | SCREW, ×4 FOR CASSETTE HOUSING |
| | or | SPST2608Z | SCREW, ×4 FOR CASSETTE HOUSING |
| | 8 | SDSG2606Z | SCREW, ×2 FOR PRE/REC BOARD |
| | 9 | PQ32217-1-1 | SHIELD CASE(2),FOR P/R BOARD |
| | 10 | GPSF2610Z | SCREW, ×4 FOR SW REG BOARD |
| | 11 | SDSF2608Z | SCREW, ×3 FOR MAIN BOARD |
| | 12 | SDSF3010M | SCREW,FOR TERMINAL BOARD |
| | 13 | GPSF2610Z | SCREW, ×2 FOR TERMINAL BOARD |
| | 14 | PQ45160 | INERTIA PLATE |

## 4.4 MECHANISM ASSEMBLY <M4>



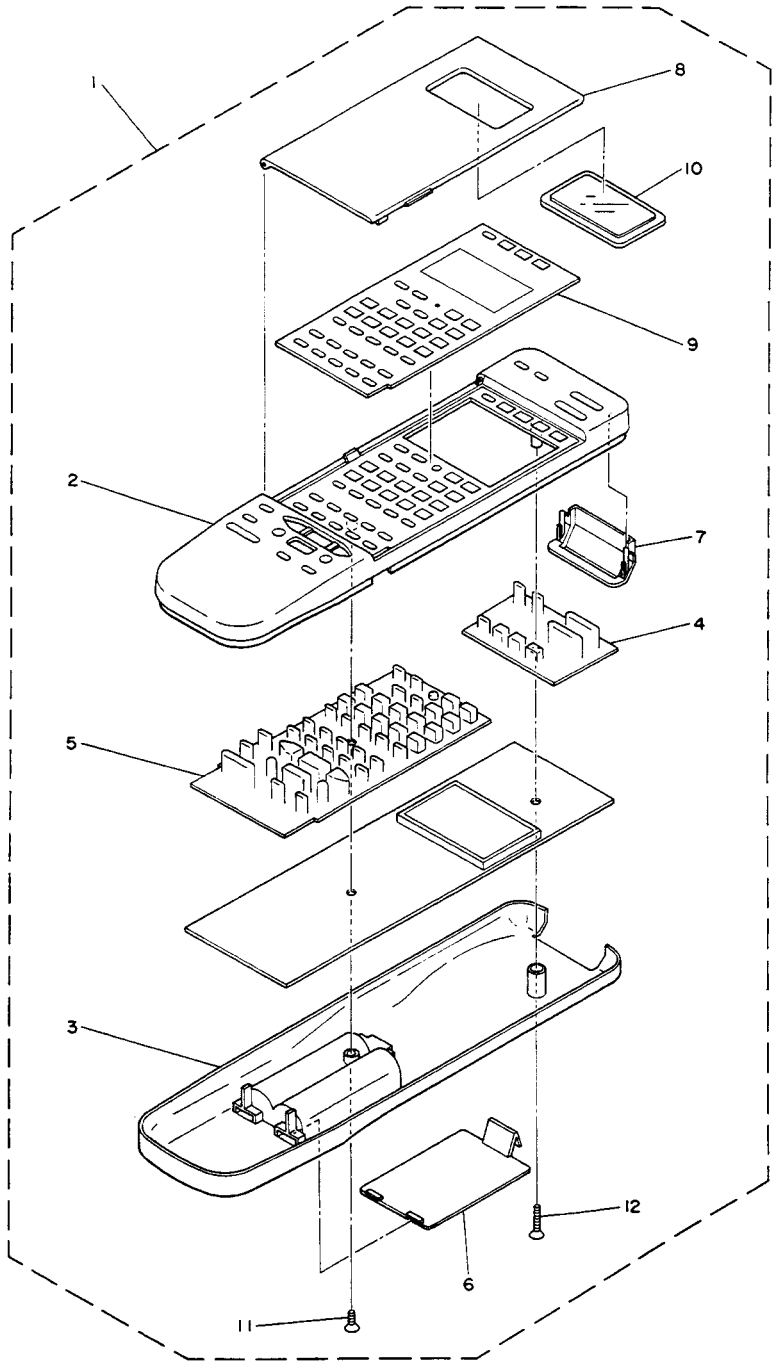

| Category | Part number | MARK |
|---|---|---|
| Grease | KANTO-G-31KAV | AA |
| Oil | COSMO-HV56 | BB |

**NOTE:** The section marked in AA and BB indicate lubrication and greasing areas.

## MECHANISM ASSEMBLY <M4>

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| | 1 | PQ43497E-10 | TENSION ARM ASSY |
| | 1A | PQ43500 | TENSION SPRING |
| | 2 | PQ44734A-5 | TENSION BAND ASSY |
| | 2A | PQ44737-2 | ADJUST PIN |
| | 4 | PU60616 | FULL ERASE HEAD |
| | 5 | SDSF2614Z | SCREW |
| | 6 | PQ43505-1-1 | ROLLER |
| | 7 | PQ43506 | GUIDE POLE CAP |
| | 8 | PU61002 | AUDIO/CONTROL HEAD |
| | 9 | PQ43509 | HEAD BASE |
| | 10 | PQ43687A | SPECIAL SCREW, ×3 |
| | 11 | PQM30002-192 | COMPRESSION SPRING, ×3 |
| | 12 | SPSF2608M | SCREW |
| | 13 | SPSP2606Z | SCREW |
| | 14 | PU61103-2 | POLE BASE(TU) ASSY |
| | 15 | PU61151-2-3 | POLE BASE(SUP) ASSY |
| | 16 | PQ43524 | STOPPER |
| | 17 | PQ43525 | STOPPER 2 |
| | 18 | PQ43526-1-3 | TAPE GUIDE |
| | 19 | PQ43670-1-1 | GUIDE FLANGE |
| | 20 | PQ43675 | TAPE GUARD |
| | 21 | PQ43506 | GUIDE POLE CAP |
| ⚠ | 22 | PU61003-1-2 | CAPSTAN MOTOR |
| | 23 | SPSG2608Z | SCREW, ×3 |
| | 24 | PU61246 | IDLER GEAR UNIT |
| | 25 | SPST2606Z | SCREW, ×2 |
| | 26 | PU61245-1-1 | CLUTCH UNIT |
| | 27 | PQM30017-8 | SLIT WASHER |
| | 28 | PQ43532B | CHANGE LEVER ASSY |
| | 29 | PU61006 | TIMING BELT |
| | 30 | PU60858-1-4 | REEL DISK (TAKE-UP) |
| | 31 | PQM30018-54 | SPACER, ×2 |
| | 32 | PQ43537A | LOADING ARM ASSY (SUPLLY) |
| | 33 | PQ43542B | LOADING ARM ASSY (TAKE-UP) |
| ⚠ | 34 | PQ43676B-5 | MODE MOTOR ASSY |
| ⚠ | or | PQ43676C | MODE MOTOR ASSY |
| | 35 | SPST2606Z | SCREW, ×2 |
| | 36 | PQ43548A-3 | WORM CLUTCH ASSY |
| | 37 | PQM30003-23 | BELT |
| | 38 | PQ20822-2-4 | CONTROL CAM |
| | 39 | PQ44581A-6 | PLATE ASSY |
| | 40 | PQM30017-12 | SLIT WASHER |
| | 41 | PQM30017-8 | SLIT WASHER |
| | 42 | PQ43558A | PINCH ROLLER ARM ASSY |
| | or | PQ43558B | PINCH ROLLER ARM ASSY |
| | 43 | PQ32415 | PINCH ROLLER PRESS LEVER |
| | 44 | PQM30001-233 | TENSION SPRING |
| | 45 | PQM30017-12 | SLIT WASHER |
| | 46 | PQ32416-2 | PINCH ROLLER CAM |
| | 47 | PQ43567A-8 | GUIDE ARM ASSY |
| | 48 | PQ43569-1-3 | TORSION SPRING |
| | 49 | PQ43570A-1 | HALF LOADING GEAR ASSY |
| | 50 | PQM30017-12 | SLIT WASHER |
| | 51 | PQ43575A-5 | CANCEL LEVER ASSY |
| | 51A | PQM30001-273 | TENSION SPRING |
| | 51B | PQM30001-237 | TENSION SPRING |
| | 51C | PQM30001-274 | TENSION SPRING |
| | 52 | PQ43578A-2 | HOOK ASSY |
| | 52A | PQM30001-238 | TENSION SPRING |
| | 53 | PQ43581C | MAIN BRAKE(SUPPLY) ASSY |
| | 54 | PQ43582B | MAIN BRAKE(TAKE-UP) ASSY |
| | 55 | PQM30001-251 | TENSION SPRING |
| | 56 | PQ43583A | SUB BRAKE ASSY (TAKE-UP) |
| | 57 | PQM30001-298 | TENSION SPRING |
| | 60 | PU60621-1-2 | LED HOLDER |
| | 61 | PU60624-1-4 | REC SAFETY SWITCH |
| | 62 | PU61247 | SLIDE ENCORDER |
| | 63 | SDSF2614Z | SCREW |
| | 64 | PQ32516 | PWB HOLDER |
| | 65 | SDST2616Z | SCREW, ×2 |
| | 66 | GPSF2608Z | SCREW, ×2 |
| | 67 | PQ43912A-7 | PULLEY ARM ASSY |
| | 68 | PQ33249 | PULLEY BASE |
| | 69 | PQ45121A | SCREW |
| | 70 | PU60859-1-4 | REEL DISK (SUPPLY) |
| | 80 | PQ44739A-1 | LOCK LEVER 1 ASSY |
| | 80A | PQM30001-278-46 | TENSION SPRING |
| | 81 | PQ44741A-3 | L.LEVER 2 ASSY |
| | 81A | PQM30001-279-52 | TENSION SPRING |
| | 82 | PQ44743A-5 | IDLER LEVER ASSY |
| | 82A | PQM30001-302 | TENSION SPRING |
| | 82B | PQM30001-301 | TENSION SPRING |
| | 82C | PQM30017-5 | SLIT WASHER |
| | 83 | PQ44746A-2 | OFF LEVER ASSY |
| | 83A | PQM30017-5 | SLIT WASHER |
| | 84 | PQ44585A-6 | CAP.BRAKE ASSY |
| | 84A | PQM30001-282-52 | SPRING |
| | 84B | PQM30017-8 | SLIT WASHER |
| | 85 | PQ44843A-1 | ARM BASE ASSY |
| | 85B | PQ33511-1-2 | CLEANER ARM |
| | 85C | PQ44841 | CANCEL LEVER |
| | 85D | PQM30001-299 | TENSION SPRING |
| | 85E | PQM30001-300 | TENSION SPRING |
| | 85F | PQM30017-5 | SLIT WASHER |
| | 86 | SPST2606Z | SCREW |
| | 87 | PQ44840A | C.BASE ASSY |
| | 87A | PQ44844A | C.BASE SA |
| | 87B | PQ44837 | CLEANER |
| | 87C | PQ44838 | CLEANER HOLDER |
| | 87D | PQM30017-38 | SLIT WASHER |
| | 100 | PQ20994B-4 | MAIN DECK ASSY |
| | 100A | PQ43849 | EARTH PLATE |
| | 100B | SPST2604Z | SCREW |

## 4.5 REMOTE CONTROL UNIT <M5>




| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|

### REMOTE CONTROLLER <M5>

| ⚠ | | | |
|---|---|---|---|
| ⚠ | 1 | PQ11202A | REMOTE CONTROLLER |
| | 2 | PQ11203 | COVER(FRONT) |
| | 3 | PQ11093 | COVER(REAR) |
| | 4 | PQ33870 | BUTTON(1) |
| | 5 | PQ21253 | BUTTON(2) |
| | 6 | PQ33609 | CAP(BATTERY) |
| | 7 | PQ33610 | WINDOW(IR) |
| | 8 | PQ33871 | DOOR |
| | 9 | PQ33872 | PLATE |
| | 10 | PQ45167 | WINDOW(DOOR) |
| | 11 | SSSF2008M | SCREW |
| | 12 | SSSF2006M | SCREW |

# SECTION 5
# ELECTRICAL PARTS LIST

## SAFETY PRECAUTION

**Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.**

## SWITCH REGULATOR BOARD ASSEMBLY <01>

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | PWBA | PB20526A-01 | SW REGULATOR BOARD ASSY | |
| | IC1 | LM358N | IC | |
| | | or LM358P | IC | |
| | | or XRA10358 | IC | |
| | | or BA10358 | IC | |
| | Q1 | 2SC4517A-LF619 | TRANSISTOR | |
| | Q2 | 2SC3616(MLK) | TRANSISTOR | |
| | Q5 | 2SB1425(EU) | TRANSISTOR | |
| | D1 | 10E6-F2 | DIODE | |
| | D2 | 10E6-F2 | DIODE | |
| | D3 | 10E6-F2 | DIODE | |
| | D4 | 10E6-F2 | DIODE | |
| | D5 | AU01 | FR DIODE | |
| | | or 1SR153-400-T2 | FR DIODE | |
| | D6 | AU01 | FR DIODE | |
| | | or 1SR153-400-T2 | FR DIODE | |
| | D7 | MTZ27BT-77 | ZENER DIODE | |
| | D8 | AU01Z | FR DIODE | |
| | | or ERA48-02 | FR DIODE | |
| | | or 1SR153-200-T2 | FR DIODE | |
| | D14 | AU01Z | FR DIODE | |
| | | or ERA48-02 | FR DIODE | |
| | | or 1SR153-200-T2 | FR DIODE | |
| | D15 | AU01Z | FR DIODE | |
| | | or ERA48-02 | FR DIODE | |
| | | or 1SR153-200-T2 | FR DIODE | |
| | D16 | FML-12S | FR DIODE | |
| | | or 5DL2CZ41A | FR DIODE | |
| | | or FCF06A20 | FR DIODE | |
| | D17 | FMB-24 | BARRIER DIODE | |
| | | or F5KQ40B | BARRIER DIODE | |
| | | or 5GWJ2CZ42 | SB DIODE | |
| | D18 | AU01Z | FR DIODE | |
| | | or ERA48-02 | FR DIODE | |
| | | or 1SR153-200-T2 | FR DIODE | |
| | D19 | MTZ33AT-77 | ZENER DIODE | |
| | D21 | AU01Z | FR DIODE | |
| | | or ERA48-02 | FR DIODE | |
| | | or 1SR153-200-T2 | FR DIODE | |
| | D22 | MTZV6.2A | ZENER DIODE | |
| | D23 | RD15ES-T1B1 | ZENER DIODE | |
| | R1 | YU40344-2R2 | WW RESISTOR | 2.2Ω,2W |
| | R2 | QRD161J-334 | RESISTOR | 330kΩ,1/6W |
| | R3 | QRD161J-334 | RESISTOR | 330kΩ,1/6W |
| | R4 | QRD161J-563 | RESISTOR | 56kΩ,1/6W |
| | R5 | QRG029J-683G | OMF RESISTOR | 68kΩ,2W |
| | R6 | QRG029J-241G | OMF RESISTOR | 240Ω,2W |
| | R7 | QRD161J-122 | RESISTOR | 1.2kΩ,1/6W |
| | R8 | QRD161J-561 | RESISTOR | 560Ω,1/6W |
| | R9 | QRX014J-R39Z | MF RESISTOR | 0.39Ω,1W |
| | R10 | QRG029J-273A | OMF RESISTOR | 27kΩ,2W |
| ⚠ | R16 | QRZ0077-470X | FUSIBLE RESISTOR | 47Ω,1/4W |
| | R17 | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R18 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R19 | QRV144F-1071A | CMF RESISTOR | 1.07kΩ,1/4W |
| | R20 | QRV144F-1001A | CMF RESISTOR | 1kΩ,1/4W |
| ⚠ | R21 | QRZ0077-470X | FUSIBLE RESISTOR | 47Ω,1/4W |
| | R22 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R23 | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R24 | QRV144F-4423AY | CMF RESISTOR | 442kΩ,1/4W |
| | R25 | QRV144F-1002A | CMF RESISTOR | 10kΩ,1/4W |
| | R26 | QRV144F-1182A | CMF RESISTOR | 11.8kΩ,1/4W |
| ⚠ | R27 | QRZ0052-130 | FUSIBLE RESISTOR | 13Ω,1/4W |
| | R28 | QRD161J-331 | RESISTOR | 330Ω,1/6W |
| | R29 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| ⚠ | C1 | QFZ9022-333 | MM CAPACITOR | 0.033μF,250V |
| ⚠ | | or QFZ9037-333 | M CAPACITOR | 0.033μF,250V |
| ⚠ | C2 | QFZ9022-333 | MM CAPACITOR | 0.033μF,250V |
| ⚠ | | or QFZ9037-333 | M CAPACITOR | 0.033μF,250V |
| ⚠ | C3 | QFZ9022-223 | MM CAPACITOR | 0.022μF,250V |
| ⚠ | C4 | QCZ9016-101K | CAPACITOR | 100pF,250V |
| ⚠ | C5 | QCZ9016-101K | CAPACITOR | 100pF,250V |
| ⚠ | C6 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| ⚠ | | or QCZ9048-222 | CAPACITOR | 0.0022μF,250V |
| ⚠ | C7 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| ⚠ | | or QCZ9048-222 | CAPACITOR | 0.0022μF,250V |
| ⚠ | C8 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| ⚠ | C9 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| ⚠ | C10 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| ⚠ | C11 | QCZ9016-222M | CAPACITOR | 0.0022μF,250V |
| | C12 | PECA0738-826 | E CAPACITOR | 82μF,400V |
| | | or PECA0793-826 | E CAPACITOR | 82μF,400V |
| | C13 | QCZ0212-472 | CAPACITOR | 0.0047μF,1KV |
| | C14 | QCZ0213-101Z | CAPACITOR | 100pF,1KV |
| | C15 | QFV11HJ-224 | TF CAPACITOR | 0.22μF,50V |
| | | or PECA0780-224Z | M CAPACITOR | 0.22μF,50V |
| | C16 | QFL41HJ-682 | M CAPACITOR | 0.0068μF,50V |
| | | or QFLA1HJ-682Z | M CAPACITOR | 0.0068μF,50V |
| | C17 | QETC1HM-475 | E CAPACITOR | 4.7μF,50V |
| | C18 | QETC1JM-336 | E CAPACITOR | 33μF,63V |
| | C19 | QEZ0125-277 | E CAPACITOR | 270μF,25V |
| | | or QEZ0138-277 | E CAPACITOR | 270μF,25V |
| | C20 | QETC1EM-227 | E CAPACITOR | 220μF,25V |
| | C21 | QEZ0105-108 | E CAPACITOR | 1000μF,16V |
| | | or QEZ0137-108 | E CAPACITOR | 1000μF,16V |
| | C22 | QETB1CM-108 | E CAPACITOR | 1000μF,16V |
| | C23 | QFL41HJ-102 | M CAPACITOR | 0.001μF,50V |
| | | or QFLA1HJ-102Z | M CAPACITOR | 0.001μF,50V |

| ⚠ | REF. No. | | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | C24 | | QEZ0136-128 | E CAPACITOR | 1200μF,10V |
| | | or | QEZ0106-128 | E CAPACITOR | 1200μF,10V |
| | C25 | | QETC1HM-476 | E CAPACITOR | 47μF,50V |
| | C26 | | QETC1VM-336 | E CAPACITOR | 33μF,35V |
| | C27 | | QFLA1HJ-103Z | M CAPACITOR | 0.01μF,50V |
| | C28 | | QEZ0156-127Z | E CAPACITOR | 120μF,6.3V |
| | | or | QEZ0135-127Z | E CAPACITOR | 120μF,6.3V |
| | C29 | | QETC0JM-107 | E CAPACITOR | 100μF,6.3V |
| | C30 | | QFLA1HJ-103Z | M CAPACITOR | 0.01μF,50V |
| | C31 | | QETB1AM-108 | E CAPACITOR | 1000μF,10V |
| | C32 | | QETC1JM-226 | E CAPACITOR | 22μF,63V |
| | C34 | | QETC1CM-107 | E CAPACITOR | 100μF,16V |
| | C35 | | QFV11HJ-104 | MM CAPACITOR | 0.1μF,50V |
| | | or | QFV41HJ-104 | TF CAPACITOR | 0.1μF,50V |
| | L1 | | PU60943-330K | COIL | 33μH |
| | | or | PELN0270-330K | COIL | 33μH |
| | | or | PELN0270-330KZ | COIL | 33μH |
| | | or | PELN0490-330K | COIL | 33μH |
| | L2 | | PU60943-330K | COIL | 33μH |
| | | or | PELN0270-330K | COIL | 33μH |
| | | or | PELN0270-330KZ | COIL | 33μH |
| | | or | PELN0490-330K | COIL | 33μH |
| | L3 | | PU60943-330K | COIL | 33μH |
| | | or | PELN0270-330K | COIL | 33μH |
| | | or | PELN0270-330KZ | COIL | 33μH |
| | | or | PELN0490-330K | COIL | 33μH |
| ⚠ | PC1 | | PC111S | PHOTO COUPLER | |
| ⚠ | POC1 | | QMP3980-200 | POWER CORD | |
| ⚠ | T1 | | PELN0480 | SW TRANS | |
| ⚠ | BKT1 | | PQ33738 | BRACKET(SW.REG) | |
| | ETH1 | | PQ43872 | EARTH PLATE, ×2 | |
| ⚠ | HD1 | | QHS3771-108 | STRAIN RELIEF | |
| ⚠ | HD2 | | PU57505 | FUSE CLIP, ×2 | |
| ⚠ | HS1 | | PQ45175 | HEAT SINK | |
| ⚠ | LF1 | | PU59707 | LINE FILTER | |
| ⚠ | | or | PELN0255 | LINE FILTER | |
| ⚠ | LF2 | | PU61108 | LINE FILTER | |
| ⚠ | | or | PU60347 | LINE FILTER | |
| | SCW1 | | SDST2605Z | SCREW, ×3 | |
| | SCW2 | | SDSG3008Z | SCREW | |
| | SCW3 | | SDSG3006Z | SCREW | |
| | SLD1 | | PQ21202 | SHIELD CASE(1) | |
| | SLD2 | | PQ33739 | SHIELD CASE(2) | |
| | SLD3 | | PQ33740 | SHIELD CASE(3) | |
| | SLD4 | | PQ33741 | SHIELD CASE(4) | |
| ⚠ | TAB1 | | A74316 | TAB, ×2 | |
| | TP | | PU56347 | TEST POINT, ×2 | |
| | CN1 | | PU60910-104 | WIRE TRAP | |
| | CN2 | | PU60910-108 | CONNECTOR | |
| ⚠ | CP1 | | ICP-N20 | CIRCUIT PROTECTOR | |
| ⚠ | CP2 | | ICP-N20 | CIRCUIT PROTECTOR | |
| ⚠ | F1 | | QMF51E2-1R0 | FUSE | T1.0A |
| ⚠ | | or | QMF51E2-1R0J1 | FUSE | T1.0A |

## MAIN BOARD ASSEMBLY <03>

| | | | | |
|---|---|---|---|---|
| | PWBA | | PB10553B | MAIN BOARD ASSY,E |
| | | | PB10553A-01 | MAIN BOARD ASSY,EG |
| ⚠ | RF1 | | PERF0068 | RF CONVERTER |
| | CL1 | | PEME0837 | CLAMP |
| | ETH1 | | PQ43012-1-1 | EARTH PLATE,FOR RF CONV |
| | HD1 | | PEME0831 | HOLDER, ×2 |
| | HD2 | | PEME0841 | HOLDER, ×2 |
| | SCW1 | | SDST2605Z | SCREW |
| | SCW2 | | SDSF2608Z | SCREW, ×2 |
| | SPC1 | | PU60010 | SPACER |
| ⚠ | TB1 | | PQ21199 | TERMINAL BOARD,EG |
| ⚠ | | | PQ21199-2 | TERMINAL BOARD,E |
| | WR1 | | PW30401-BB20T | COAXIAL CORD, RF CONV-TNR |
| | | or | PW30402-BB20M | COAXIAL CORD |
| | | or | PW30401-BB20S | COAXIAL CORD |
| | J701 | | PEMC0766 | RGB21PIN SOCKET |
| | J702 | | PU60612 | EARPHONE JACK |
| | | or | PU61012 | MINI JACK |
| | J703 | | PEMC0824 | DIN CONNECTOR |
| | TP31 | | PU57545 | TEST PIN, ×17(EG), X18(E) |

### —AUDIO SECTION—

| ⚠ | IC1 | | BA7765AS | IC |
|---|---|---|---|---|
| ⚠ | | or | XRA7765AS | IC |
| | Q1 | | 2SC1740S(RS) | TRANSISTOR |
| | | or | 2SC3199(G) | TRANSISTOR |
| | Q2 | | 2SC1740S(RS) | TRANSISTOR |
| | | or | 2SC3199(G) | TRANSISTOR |
| | Q3 | | DTA114ES | TRANSISTOR |
| | Q4 | | 2SC1740S(RS) | TRANSISTOR |
| | | or | 2SC3199(G) | TRANSISTOR |
| | Q5 | | DTA124ES | TRANSISTOR |
| | Q6 | | DTA144ES | TRANSISTOR |
| | D2 | | 1SS133 | DIODE |

| ⚠ | REF. No. | | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | | or | MA165 | DIODE | |
| | D3 | | RD5.1ES-T1B2 | ZENER DIODE | |
| | | or | UZ5.1BSB | ZENER DIODE | |
| | | or | HZS5.1EB2 | ZENER DIODE | |
| | R1 | | QRD161J-473 | RESISTOR | 47kΩ,1/6W |
| | R2 | | QRD161J-473 | RESISTOR | 47kΩ,1/6W |
| | R4 | | QRD161J-242 | RESISTOR | 2.4kΩ,1/6W |
| | R5 | | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R6 | | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R7 | | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R8 | | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R9 | | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R10 | | QRD161J-100 | RESISTOR | 10Ω,1/6W |
| | R11 | | QVZ3518-683AZ | V RESISTOR,BIAS ADJ | 68kΩ |
| | | or | QVZ3523-683AZ | V RESISTOR,BIAS ADJ | 68kΩ |
| | R12 | | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R13 | | QRD161J-6R8 | RESISTOR | 6.8Ω,1/6W |
| | R15 | | QRD161J-223 | RESISTOR | 22kΩ,1/6W |
| | R16 | | QRD161J-181 | RESISTOR | 180Ω,1/6W |
| | R17 | | QRD161J-274 | RESISTOR | 270kΩ,1/6W |
| | R18 | | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R21 | | QRD161J-183 | RESISTOR | 18kΩ,1/6W |
| | R22 | | QRD161J-682 | RESISTOR | 6.8kΩ,1/6W |
| | R23 | | QRD161J-752 | RESISTOR | 7.5kΩ,1/6W |
| | R24 | | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R25 | | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R26 | | QRD161J-475 | RESISTOR | 4.7MΩ,1/6W |
| | R27 | | QRD161J-475 | RESISTOR | 4.7MΩ,1/6W |
| | R28 | | QRD161J-123 | RESISTOR | 12kΩ,1/6W |
| | R29 | | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R30 | | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R32 | | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R34 | | QRD161J-151 | RESISTOR | 150Ω,1/6W |
| | R36 | | QRD161J-332 | RESISTOR | 3.3kΩ,1/6W |
| | R37 | | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R41 | | QRD161J-475 | RESISTOR | 4.7MΩ,1/6W |
| | R45 | | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R46 | | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| ⚠ | R47 | | QRZ0077-4R7X | FUSIBLE RESISTOR | 4.7Ω,1/4W |
| | R49 | | QRD161J-473 | RESISTOR | 47kΩ,1/6W |
| | R50 | | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | C1 | | QCXB1CM-122 | CAPACITOR | 0.0012μF,16V |
| | C2 | | QCXB1CM-122 | CAPACITOR | 0.0012μF,16V |
| | C3 | | QCC11EJ-272 | CAPACITOR | 0.0027μF,25V |
| | C4 | | QCC11EJ-392 | CAPACITOR | 0.0039μF,25V |
| | C5 | | QETA1EM-475 | E CAPACITOR | 4.7μF,25V |
| | C6 | | QFL31HJ-122 | M CAPACITOR | 0.0012μF,50V |
| | C8 | | PU60550-105 | E CAPACITOR | 1μF,50V |
| | C9 | | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C10 | | QFV71HJ-103 | TF CAPACITOR | 0.01μF,50V |
| | C11 | | QEK61HM-105 | E CAPACITOR | 1μF,50V |
| | C12 | | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C13 | | QCC11CJ-104 | CAPACITOR | 0.1μF,16V |
| | C14 | | QETC1CM-336 | E CAPACITOR | 33μF,16V |
| | C15 | | QETC1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C16 | | QETC1HM-105 | E CAPACITOR | 1μF,50V |

| ⚠ | REF. No. | | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|---|
| | C17 | | QFV71HJ-123 | TF CAPACITOR | 0.012μF,50V |
| | C19 | | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C20 | | QCC11EJ-183 | CAPACITOR | 0.018μF,25V |
| | C21 | | QCC11EJ-272 | CAPACITOR | 0.0027μF,25V |
| | C24 | | QCC11EJ-222 | CAPACITOR | 0.0022μF,25V |
| | C25 | | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C26 | | QCBB1HJ-331 | CAPACITOR | 330pF,50V |
| | C27 | | QFV71HJ-473 | TF CAPACITOR | 0.047μF,50V |
| | C28 | | QCXB1CM-122 | CAPACITOR | 0.0012μF,16V |
| | C29 | | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | L1 | | PU58308-103J | COIL | 10mH |
| | L2 | | PU59152-3R9J | COIL | 3.9μH |
| | L3 | | PU59152-3R9J | COIL | 3.9μH |
| | L4 | | PU59152-2R2J | COIL | 2.2μH |
| | L5 | | PU48530-471K | COIL | 470μH |
| | K1 | | PU60281-4 | FERRITE BEADS, E | |
| | | | PU60281-5 | FERRITE BEADS, EG | |
| ⚠ | T1 | | PU60510-3 | OSC TRANSFORMER | |
| | CN1 | | PU59555-7 | CONNECTOR | |
| | CN2 | | PU58844-2 | CONNECTOR | |

## —VIDEO SECTION—

| | | | |
|---|---|---|---|
| IC280 | | BA7106LS | IC |
| | or | XRA7106LS | IC |
| Q201 | | 2SC1740S(RS) | TRANSISTOR |
| | or | 2SC3199(GB)-TJK | TRANSISTOR |
| Q202 | | 2SC1740S(RS) | TRANSISTOR |
| | or | 2SC3199(GB)-TJK | TRANSISTOR |
| Q206 | | 2SC1740S(RS) | TRANSISTOR |
| | or | 2SC3199(GB)-TJK | TRANSISTOR |
| Q207 | | 2SC1740S(RS) | TRANSISTOR |
| | or | 2SC3199(GB)-TJK | TRANSISTOR |
| Q210 | | 2SA933S(RS) | TRANSISTOR |
| | or | 2SA1267(YG)-TJK | TRANSISTOR |
| Q211 | | 2SA933S(RS) | TRANSISTOR |
| | or | 2SA1267(YG)-TJK | TRANSISTOR |
| Q213 | | 2SC1740S(RS) | TRANSISTOR |
| | or | 2SC3199(GB)-TJK | TRANSISTOR |
| Q214 | | 2SA933S(RS) | TRANSISTOR |
| | or | 2SA1267(YG)-TJK | TRANSISTOR |
| Q217 | | DTA114ES | TRANSISTOR |
| D202 | | 1SS133 | DIODE |
| | or | MA165 | DIODE |
| D207 | | 1SS133 | DIODE |
| | or | MA165 | DIODE |
| D208 | | 1SS133 | DIODE |
| | or | MA165 | DIODE |
| D212 | | 1SS133 | DIODE |
| | or | MA165 | DIODE |
| D213 | | 1SS133 | DIODE |
| | or | MA165 | DIODE |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | D214 | 1SS133 | DIODE | |
| | | or MA165 | DIODE | |
| | D280 | 1SS133 | DIODE | |
| | | or MA165 | DIODE | |
| | R201 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R202 | QRD161J-223 | RESISTOR | 22kΩ,1/6W |
| | R203 | QRD161J-223 | RESISTOR | 22kΩ,1/6W |
| | R206 | QRD161J-101 | RESISTOR | 100Ω,1/6W |
| | R208 | QVZ3518-332AZ | V RESISTOR,SP FREQ | 3.3kΩ |
| | | or QVZ3523-332AZ | V RESISTOR,SP FREQ | 3.3kΩ |
| | R209 | QRD161J-152 | RESISTOR | 1.5kΩ,1/6W |
| | R210 | QRD161J-621 | RESISTOR | 620Ω,1/6W |
| | R211 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R212 | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R213 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R214 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R215 | QVZ3518-681AZ | V RESISTOR,SP REC COLOUR | 680Ω |
| | | or QVZ3523-681AZ | V RESISTOR,SP REC COLOUR | 680Ω |
| | R216 | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R217 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R218 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R227 | QRD121J-391S | RESISTOR | 390Ω,1/2W |
| | R229 | QRD161J-123 | RESISTOR | 12kΩ,1/6W |
| | R230 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R240 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R242 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R243 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R244 | QRD161J-152 | RESISTOR | 1.5kΩ,1/6W |
| | R245 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R246 | QVZ3518-222AZ | V RESISTOR,REC FM ADJ | 2.2kΩ |
| | | or QVZ3523-222AZ | V RESISTOR,REC FM ADJ | 2.2kΩ |
| | R247 | QRD161J-152 | RESISTOR | 1.5kΩ,1/6W |
| | R248 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R249 | QRD161J-681 | RESISTOR | 680Ω,1/6W |
| | R250 | QRD161J-750 | RESISTOR | 75Ω,1/6W |
| | R251 | QRD161J-750 | RESISTOR | 75Ω,1/6W |
| | R257 | QRD161J-562 | RESISTOR | 5.6kΩ,1/6W |
| | R258 | QRD161J-562 | RESISTOR | 5.6kΩ,1/6W |
| | R259 | QRD161J-561 | RESISTOR | 560Ω,1/6W |
| | R262 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R264 | QRD161J-331 | RESISTOR | 330Ω,1/6W |
| | R265 | QRD181J-102 | RESISTOR, E | 1kΩ,1/8W |
| | | QRD161J-102 | RESISTOR, EG | 1kΩ,1/6W |
| | R280 | QRD161J-914 | RESISTOR | 910kΩ,1/6W |
| | R281 | QRD161J-681 | RESISTOR | 680Ω,1/6W |
| | R282 | QRD161J-391 | RESISTOR | 390Ω,1/6W |
| | R283 | QRD161J-104 | RESISTOR | 100kΩ,1/6W |
| | R284 | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R285 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R286 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | C201 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C202 | QCSB1HJ-390 | CAPACITOR | 39pF,50V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C203 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C204 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C205 | QETC0JM-476 | E CAPACITOR | 47μF,6.3V |
| | C206 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C207 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C208 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C209 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C212 | QER61CM-476 | E CAPACITOR | 47μF,16V |
| | C213 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C214 | QETC0JM-476 | E CAPACITOR | 47μF,6.3V |
| | C215 | QETC0JM-108 | E CAPACITOR | 1000μF,6.3V |
| | C216 | QETC0JM-476 | E CAPACITOR | 47μF,6.3V |
| | C217 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C222 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C226 | QCSB1HK-4R7 | CAPACITOR | 4R0μF,50V |
| | C227 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C280 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C281 | QETC1HM-335 | E CAPACITOR | 3.3μF,50V |
| | C282 | QCBB1HJ-471 | CAPACITOR | 470pF,50V |
| | C284 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C285 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C286 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C287 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C288 | QFN31HJ-471 | M CAPACITOR | 470pF,50V |
| | C289 | QCSB1HJ-270 | CAPACITOR | 27pF,50V |
| | C290 | QCXB1CN-472 | CAPACITOR | 0.0047μF,16V |
| | C291 | QCSB1HK-4R7 | CAPACITOR | 4R0μF,50V |
| | C293 | QETC0JM-477 | E CAPACITOR | 470μF,6.3V |
| | C294 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C295 | QCBB1HJ-101 | CAPACITOR | 100pF,50V |
| | L201 | PU48530-101K | COIL | 100μH |
| | L202 | PU59152-180J | COIL | 18μH |
| | L203 | PU48530-101K | COIL | 100μH |
| | L204 | PU48530-101K | COIL | 100μH |
| | L206 | PU59152-121J | COIL | 120μH |
| | L280 | PU48530-101K | COIL | 100μH |
| | L282 | PU60655-2 | COIL,SECAM DET | |
| | EQ201 | PU54838 | EQUALIZER | |
| | | or PU60714 | EQUALIZER | |
| | CN201 | PU58844-5 | CONNECTOR | |
| | CN203 | PU59555-3 | CONNECTOR | |

## —SERVO SECTION—

| | | | |
|---|---|---|---|
| | IC401 | HD49733NT | IC |
| | | or HD49733ANT | IC |
| | IC501 | BA7039 | IC |
| | | or XRA7039 | IC |
| | Q402 | 2SA1309(QRS) | TRANSISTOR |
| | | or 2SA933S(QRS) | TRANSISTOR |
| | | or 2SA1267(YG)-TJK | TRANSISTOR |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | D401 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D402 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D403 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D404 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D407 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D408 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D409 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D410 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | R401 | QRD161J-223 | RESISTOR | 22kΩ,1/6W |
| | R402 | QRD161J-225 | RESISTOR | 2.2MΩ,1/6W |
| | R403 | QRD161J-683 | RESISTOR | 68kΩ,1/6W |
| | R404 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R405 | QRD161J-123 | RESISTOR | 12kΩ,1/6W |
| | R406 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R407 | QRD161J-392 | RESISTOR | 3.9kΩ,1/6W |
| | R408 | QRD161J-105 | RESISTOR | 1MΩ,1/6W |
| | R409 | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R411 | QRD161J-105 | RESISTOR | 1MΩ,1/6W |
| | R412 | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R413 | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R414 | QRD161J-335 | RESISTOR | 3.3MΩ,1/6W |
| | R415 | QRD161J-334 | RESISTOR | 330kΩ,1/6W |
| | R416 | QRD161J-822 | RESISTOR | 8.2kΩ,1/6W |
| | R418 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R419 | QRD161J-473 | RESISTOR | 47kΩ,1/6W |
| | R420 | QVZ3518-684 | V RESISTOR,SP PB SW POINT | 680kΩ |
| | R422 | QRD161J-104 | RESISTOR | 100kΩ,1/6W |
| | R426 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | R427 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R428 | QRD161J-105 | RESISTOR | 1MΩ,1/6W |
| | R429 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R430 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R434 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R435 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R436 | QRD161J-274 | RESISTOR | 270kΩ,1/6W |
| | R437 | QRD161J-274 | RESISTOR | 270kΩ,1/6W |
| | R438 | QRD161J-224 | RESISTOR | 220kΩ,1/6W |
| | R439 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R440 | QRD161J-474 | RESISTOR | 470kΩ,1/6W |
| | R441 | QRD161J-823 | RESISTOR | 82kΩ,1/6W |
| | R501 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R502 | QRD161J-332 | RESISTOR | 3.3kΩ,1/6W |
| | R503 | QRD161J-272 | RESISTOR | 2.7kΩ,1/6W |
| | R508 | QRD161J-124 | RESISTOR | 120kΩ,1/6W |
| | C401 | QCVB1CM-103 | CAPACITOR | 0.01μF,16V |
| | C402 | QEK61AM-226 | E CAPACITOR | 22μF,10V |
| | C403 | QFV11HJ-224 | TF CAPACITOR | 0.22μF,50V |
| | C404 | QCC31CK-682 | CAPACITOR | 0.0068μF,16V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C405 | QEK61EM-475 | E CAPACITOR | 4.7μF,25V |
| | C406 | QEK61EM-475 | E CAPACITOR | 4.7μF,25V |
| | C407 | QEK61CM-106 | E CAPACITOR | 10μF,16V |
| | C408 | QEK61CM-106 | E CAPACITOR | 10μF,16V |
| | C409 | QCC31CK-223 | CAPACITOR | 0.022μF,16V |
| | C410 | QFV71HJ-184 | TF CAPACITOR | 0.18μF,50V |
| | or | QFV11HJ-184 | MMT CAP | 0.18μF,50V |
| | C411 | QCBB1HJ-471 | CAPACITOR | 470pF,50V |
| | C412 | QFL31HJ-682 | M CAPACITOR | 0.0068μF,50V |
| | or | QFN31HJ-682 | M CAPACITOR | 0.0068μF,50V |
| | C414 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C415 | QEK61AM-226 | E CAPACITOR | 22μF,10V |
| | C416 | QEK61AM-226 | E CAPACITOR | 22μF,10V |
| | C417 | QCBB1HJ-271 | CAPACITOR | 270pF,50V |
| | C418 | QCBB1HJ-561 | CAPACITOR | 560pF,50V |
| | C419 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C420 | QEK61HM-105 | E CAPACITOR | 1μF,50V |
| | C421 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C422 | QFV71HJ-563 | TF CAPACITOR | 0.056μF,50V |
| | or | QFV11HJ-563 | MMT CAP | 0.056μF,50V |
| | C423 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C427 | QCBB1HJ-181 | CAPACITOR | 180pF,50V |
| | C502 | QCVB1CM-103 | CAPACITOR | 0.01μF,16V |
| | C504 | QFV71HJ-104 | TF CAPACITOR | 0.1μF,50V |
| | or | QFV11HJ-104 | MM CAPACITOR | 0.1μF,50V |
| | C505 | QCVB1CM-103 | CAPACITOR | 0.01μF,16V |
| | C506 | QFV71HJ-683 | TF CAPACITOR | 0.068μF,50V |
| | or | QFV11HJ-683 | MMT CAP | 0.068μF,50V |
| | C507 | QCVB1CM-103 | CAPACITOR | 0.01μF,16V |
| | C508 | QEK61AM-226 | E CAPACITOR | 22μF,10V |
| | C509 | QCVB1CM-103 | CAPACITOR | 0.01μF,16V |
| | L501 | PU59152-270J | COIL | 27μH |
| | CN401 | PU59555-4 | CONNECTOR | |
| ⚠ | CP401 | ICP-F15 | CIRCUIT PROTECTOR | |

## —MECHACON SECTION—

| | | | |
|---|---|---|---|
| | IC601 | M37524M3-150SP | IC |
| | IC602 | CAT35C104P-007 | IC |
| | Q601 | 2SB1425(EU) | TRANSISTOR |
| | Q602 | DTC114ES | TRANSISTOR |
| | Q605 | DTA124ES | TRANSISTOR |
| | D601 | MA165 | DIODE |
| | or | 1SS133 | DIODE |
| | D602 | HZS8.2EB2TJ | ZENER DIODE |
| | or | MTZ8.2BT-77 | ZENER DIODE |
| | or | UZ8.2BSB | ZENER DIODE |
| | D603 | MA165 | DIODE |
| | or | 1SS133 | DIODE |
| | D604 | MA165 | DIODE |
| | or | 1SS133 | DIODE |
| | D605 | MA165 | DIODE |
| | or | 1SS133 | DIODE |
| | D606 | 11ES2 | DIODE |
| | or | ERA15-02 | DIODE |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | | or S5688G | DIODE | |
| | | or 1SR139-200 | DIODE | |
| | D607 | MA165 | DIODE | |
| | | or 1SS133 | DIODE | |
| | R601 | QRD161J-681 | RESISTOR | 680Ω,1/6W |
| | R602 | QRD161J-105 | RESISTOR | 1MΩ,1/6W |
| | R603 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R604 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R605 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R606 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R607 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R608 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R609 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R610 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R611 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R612 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R613 | QRD161J-332 | RESISTOR | 3.3kΩ,1/6W |
| | R614 | QRD161J-332 | RESISTOR | 3.3kΩ,1/6W |
| | R615 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R616 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R617 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R618 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R619 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R620 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R621 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R622 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R623 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R624 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R625 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R626 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R627 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R628 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R629 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R630 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R631 | QRD161J-822 | RESISTOR | 8.2kΩ,1/6W |
| | R632 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R633 | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R634 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R636 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | R638 | QRD161J-152 | RESISTOR | 1.5kΩ,1/6W |
| | R639 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R640 | QRD161J-303 | RESISTOR | 30kΩ,1/6W |
| | R641 | QRD161J-224 | RESISTOR | 220kΩ,1/6W |
| | R642 | QRD161J-563 | RESISTOR | 56kΩ,1/6W |
| | R643 | QRD161J-154 | RESISTOR | 150kΩ,1/6W |
| | R644 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R645 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R647 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R649 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R650 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R651 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R652 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R653 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R654 | QRD161J-561 | RESISTOR | 560Ω,1/6W |
| | C601 | QCFB1EZ-223 | CAPACITOR | 0.022μF,25V |
| | C602 | QEK61EM-335 | E CAPACITOR | 3.3μF,25V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C603 | QER61HM-105 | E CAPACITOR | 1μF,50V |
| | C604 | QEK60JM-107 | E CAPACITOR | 100μF,6.3V |
| | C605 | QCBB1HJ-121 | CAPACITOR | 120pF,50V |
| | C606 | QCC11EK-473 | CAPACITOR | 0.047μF,25V |
| | L601 | PU59152-2R2J | COIL | 2.2μH |
| ⚠ | CF601 | PEVB0340 | RESONATOR | |
| ⚠ | TH801 | PU52108-1R0 | POSITIVE THERMISTOR | |
| | CN601 | PEMC0722-017 | WIRE TRAP | |
| | | or PEMC0753-017 | WIRE TRAP | |
| | CN602 | PU59555-4 | CONNECTOR | |
| | CN603 | PU60910-10 | WIRE TRAP | |
| ⚠ | CP602 | ICP-F20 | CIRCUIT PROTECTOR | |

## —REGULATOR SECTION—

| | | | | |
|---|---|---|---|---|
| | IC801 | UPC24M05HF | IC,E | |
| | | UPC2405HF | IC,EG | |
| | | or LM2940CT-5.0 | IC | |
| | Q801 | 2SB1425(EU) | TRANSISTOR | |
| ⚠ | Q802 | 2SC1740S | TRANSISTOR | |
| | Q803 | 2SB941P | TRANSISTOR | |
| | | or 2SA1488 | TRANSISTOR | |
| | Q804 | 2SC1740S(Q) | TRANSISTOR | |
| | Q805 | 2SC1740S | TRANSISTOR | |
| | Q806 | 2SA933S | TRANSISTOR | |
| | | or 2SA1267(YG)-TJK | TRANSISTOR | |
| | D801 | 1SS133 | DIODE | |
| | | or MA165 | DIODE | |
| | D802 | UZ5.1BSC | ZENER DIODE | |
| | | or MTZV5.1C | ZENER DIODE | |
| | | or RD5.1ES-T1B3 | ZENER DIODE | |
| | R801 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R802 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R803 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R804 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R805 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R806 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R807 | QRD161J-221 | RESISTOR | 220Ω,1/6W |
| | R808 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R809 | QRD161J-822 | RESISTOR | 8.2kΩ,1/6W |
| | R810 | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R811 | QVZ3518-471A | V RESISTOR,SWD5V | 470Ω |
| | | or QVZ3523-471A | V RESISTOR,SWD5V | 470Ω |
| | R812 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | C803 | QETC1CM-107 | E CAPACITOR | 100μF,16V |
| | C804 | QETC0JM-107 | E CAPACITOR | 100μF,6.3V |
| | C805 | QETC1AM-107 | E CAPACITOR | 100μF,10V |
| | C806 | QFLA1HJ-103Z | M CAPACITOR | 0.01μF,50V |
| | C807 | QETC1CM-476 | E CAPACITOR | 47μF,16V |
| | C808 | QETC0JM-107 | E CAPACITOR | 100μF,6.3V |
| | C809 | QFN31HJ-102 | M CAPACITOR | 0.001μF,50V |
| | C811 | QETC0JM-107 | E CAPACITOR | 100μF,6.3V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | CN801 | PU61044-8 | WIRE TRAP | |
| | | **—VPS SECTION <EG ONLY>—** | | |
| | IC101 | SAA4700 | IC | |
| | R101 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R102 | QRD161J-822 | RESISTOR | 8.2kΩ,1/6W |
| | R103 | QRD161J-753 | RESISTOR | 75kΩ,1/6W |
| | C101 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C102 | QCXB1CN-472 | CAPACITOR | 0.0047μF,16V |
| | C103 | QFJ41HJ-104 | M CAPACITOR | 0.1μF,50V |
| | C104 | QCBB1HJ-471 | CAPACITOR | 470pF,50V |
| | C105 | QFJ41HJ-104 | M CAPACITOR | 0.1μF,50V |
| | C106 | QCXB1CN-472 | CAPACITOR | 0.0047μF,16V |
| | C107 | QCF11HP-223 | CAPACITOR | 0.022μF,50V |
| | or | QCF31HP-223 | CAPACITOR | 0.022μF,50V |
| | | **—TERMINAL SECTION—** | | |
| | Q702 | 2SB810H,J | TRANSISTOR | |
| | D701 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D702 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D705 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | R703 | QRD161J-393 | RESISTOR | 39kΩ,1/6W |
| | R704 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | L701 | PU59152-100J | COIL | 10μH |
| | L703 | PU59152-100J | COIL | 10μH |
| | CN701 | PEMC0823-009 | B TO B CONN | |
| | CN703 | PEMC0823-009 | B TO B CONN | |

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## VIDEO UNIT BOARD ASSEMBLY <05>

| | | | |
|---|---|---|---|
| PWBA | PB10554A-02 | VIDEO UNIT BOARD ASSY | |
| IC1 | JCP0016-2 | IC | |
| IC2 | TL8827P | IC | |
| Q1 | 2SA1576(QRS) | TRANSISTOR | |
| Q5 | 2SA1576(QRS) | TRANSISTOR | |
| Q10 | 2SC4081(QRS) | TRANSISTOR | |
| Q11 | DTC144WU | TRANSISTOR | |
| Q12 | DTC144WU | TRANSISTOR | |
| Q13 | DTC144WU | TRANSISTOR | |
| Q14 | DTC144WU | TRANSISTOR | |
| Q16 | DTC144WU | TRANSISTOR | |
| Q18 | 2SC4081(QRS) | TRANSISTOR | |
| Q19 | 2SC4081(QRS) | TRANSISTOR | |
| Q20 | 2SC4081(QRS) | TRANSISTOR | |
| Q21 | 2SA1576(QRS) | TRANSISTOR | |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | Q22 | 2SA1576(QRS) | TRANSISTOR | |
| | Q23 | DTC144WU | TRANSISTOR | |
| | Q24 | 2SA1576(QRS) | TRANSISTOR | |
| | Q25 | 2SC4081(QRS) | TRANSISTOR | |
| | Q26 | 2SC4081(QRS) | TRANSISTOR | |
| | Q28 | 2SC4081(QRS) | TRANSISTOR | |
| | Q29 | 2SC4081(QRS) | TRANSISTOR | |
| | Q30 | 2SC4081(QRS) | TRANSISTOR | |
| | D1 | 1SS292 | DIODE | |
| | D3 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D4 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D5 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D6 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D7 | DAN202U | DIODE | |
| | D8 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D10 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D11 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D12 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D14 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D15 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D17 | DAN202U | DIODE | |
| | D19 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | D20 | 1SS133 | DIODE | |
| | or | MA165 | DIODE | |
| | R1 | NRSA63J-681N | RESISTOR | 680Ω,1/16W |
| | or | NRSA63J-681NC | RESISTOR | 680Ω,1/16W |
| | R2 | NRSA63J-475N | RESISTOR | 4.7MΩ,1/16W |
| | or | NRSA63J-475NC | RESISTOR | 4.7MΩ,1/16W |
| | R3 | NRSA63J-475N | RESISTOR | 4.7MΩ,1/16W |
| | or | NRSA63J-475NC | RESISTOR | 4.7MΩ,1/16W |
| | R6 | NRSA63J-361N | RESISTOR | 360Ω,1/16W |
| | or | NRSA63J-361NC | RESISTOR | 360Ω,1/16W |
| | R10 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | or | NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R11 | NRSA63J-681N | RESISTOR | 680Ω,1/16W |
| | or | NRSA63J-681NC | RESISTOR | 680Ω,1/16W |
| | R12 | ERS-L39J-102U | RESISTOR | 1kΩ |
| | R13 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R16 | NRSA63J-392N | RESISTOR | 3.9kΩ,1/16W |
| | or | NRSA63J-392NC | RESISTOR | 3.9kΩ,1/16W |
| | R17 | NVP1301-222NU | V. RESISTOR, PB Y LEVEL | 2.2kΩ |
| | R18 | NRSA63J-333N | RESISTOR | 33kΩ,1/16W |
| | or | NRSA63J-333NC | RESISTOR | 33kΩ,1/16W |
| | R19 | NRSA63J-823N | RESISTOR | 82kΩ,1/16W |
| | or | NRSA63J-823NC | RESISTOR | 82kΩ,1/16W |
| | R21 | NRSA63J-331N | RESISTOR | 330Ω,1/16W |
| | or | NRSA63J-331NC | RESISTOR | 330Ω,1/16W |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R22 | NRSA63J-621N | RESISTOR | 620Ω,1/16W |
| | | or NRSA63J-621NC | RESISTOR | 620Ω,1/16W |
| | R23 | NRSA63J-561N | RESISTOR | 560Ω,1/16W |
| | | or NRSA63J-561NC | RESISTOR | 560Ω,1/16W |
| | R24 | NRSA63J-182N | RESISTOR | 1.8kΩ,1/16W |
| | | or NRSA63J-182NC | RESISTOR | 1.8kΩ,1/16W |
| | R25 | NRSA63J-222N | RESISTOR | 2.2kΩ,1/16W |
| | | or NRSA63J-222NC | RESISTOR | 2.2kΩ,1/16W |
| | R26 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R27 | NRSA63J-183N | RESISTOR | 18kΩ,1/16W |
| | | or NRSA63J-183NC | RESISTOR | 18kΩ,1/16W |
| | R28 | NRSA63J-822N | RESISTOR | 8.2kΩ,1/16W |
| | | or NRSA63J-822NC | RESISTOR | 8.2kΩ,1/16W |
| | R29 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R30 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R31 | NRSA63J-183N | RESISTOR | 18kΩ,1/16W |
| | | or NRSA63J-183NC | RESISTOR | 18kΩ,1/16W |
| | R32 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R33 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R35 | NRSA63J-332N | RESISTOR | 3.3kΩ,1/16W |
| | | or NRSA63J-332NC | RESISTOR | 3.3kΩ,1/16W |
| | R36 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R37 | NRSA63J-332N | RESISTOR | 3.3kΩ,1/16W |
| | | or NRSA63J-332NC | RESISTOR | 3.3kΩ,1/16W |
| | R38 | NRSA63J-332N | RESISTOR | 3.3kΩ,1/16W |
| | | or NRSA63J-332NC | RESISTOR | 3.3kΩ,1/16W |
| | R40 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R41 | NVP1301-223NU | V. RESISTOR, CARRIER | 22kΩ |
| | R42 | NVP1301-103NU | V. RESISTOR, DEVIATION | 10kΩ |
| | R43 | NRSA63J-222N | RESISTOR | 2.2kΩ,1/16W |
| | | or NRSA63J-222NC | RESISTOR | 2.2kΩ,1/16W |
| | R44 | NRSA63J-432N | RESISTOR | 4.3kΩ,1/16W |
| | | or NRSA63J-432NC | RESISTOR | 4.3kΩ,1/16W |
| | R45 | NRSA63J-122N | RESISTOR | 1.2kΩ,1/16W |
| | | or NRSA63J-122NC | RESISTOR | 1.2kΩ,1/16W |
| | R46 | NRSA63J-431N | RESISTOR | 430Ω,1/16W |
| | | or NRSA63J-431NC | RESISTOR | 430Ω,1/16W |
| | R47 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | | or NRSA63J-103NC | RESISTOR | 10kΩ,1/16W |
| | R48 | NRSA63G-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63G-102NC | RESISTOR | 1kΩ,1/16W |
| | R49 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | | or NRSA63J-103NC | RESISTOR | 10kΩ,1/16W |
| | R51 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R52 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R53 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R54 | NRSA63J-242N | RESISTOR | 2.4kΩ,1/16W |
| | | or NRSA63J-242NC | RESISTOR | 2.4kΩ,1/16W |
| | R55 | NRSA63J-392N | RESISTOR | 3.9kΩ,1/16W |
| | | or NRSA63J-392NC | RESISTOR | 3.9kΩ,1/16W |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R56 | NVP1301-152NZ | V. RESISTOR, N.C BALANCE | 1.5kΩ |
| | R57 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R58 | NRSA63J-821N | RESISTOR | 820Ω,1/16W |
| | | or NRSA63J-821NC | RESISTOR | 820Ω,1/16W |
| | R59 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R60 | NVP1301-103NU | V. RESISTOR, EE Y LEVEL | 10kΩ |
| | R61 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R62 | NRSA63J-334N | RESISTOR | 330kΩ,1/16W |
| | | or NRSA63J-334NC | RESISTOR | 330kΩ,1/16W |
| | R63 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R64 | NVP1301-332NU | V. RESISTOR, WHITE CLIP | 3.3kΩ |
| | R65 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | | or NRSA63J-103NC | RESISTOR | 10kΩ,1/16W |
| | R66 | NRSA63J-434N | RESISTOR | 430kΩ,1/16W |
| | | or NRSA63J-434NC | RESISTOR | 430kΩ,1/16W |
| | R67 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R68 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R69 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R70 | NRSA63J-471N | RESISTOR | 470Ω,1/16W |
| | | or NRSA63J-471NC | RESISTOR | 470Ω,1/16W |
| | R71 | NRSA63J-122N | RESISTOR | 1.2kΩ,1/16W |
| | | or NRSA63J-122NC | RESISTOR | 1.2kΩ,1/16W |
| | R72 | NRSA63J-333N | RESISTOR | 33kΩ,1/16W |
| | | or NRSA63J-333NC | RESISTOR | 33kΩ,1/16W |
| | R73 | NRSA63J-333N | RESISTOR | 33kΩ,1/16W |
| | | or NRSA63J-333NC | RESISTOR | 33kΩ,1/16W |
| | R74 | NRSA63J-681N | RESISTOR | 680Ω,1/16W |
| | | or NRSA63J-681NC | RESISTOR | 680Ω,1/16W |
| | R75 | NRSA63J-561N | RESISTOR | 560Ω,1/16W |
| | | or NRSA63J-561NC | RESISTOR | 560Ω,1/16W |
| | R76 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | | or NRSA63J-102NC | RESISTOR | 1kΩ,1/16W |
| | R77 | NRSA63J-562N | RESISTOR | 5.6kΩ,1/16W |
| | | or NRSA63J-562NC | RESISTOR | 5.6kΩ,1/16W |
| | R78 | NRSA63J-681N | RESISTOR | 680Ω,1/16W |
| | | or NRSA63J-681NC | RESISTOR | 680Ω,1/16W |
| | R79 | NRSA63J-222N | RESISTOR | 2.2kΩ,1/16W |
| | | or NRSA63J-222NC | RESISTOR | 2.2kΩ,1/16W |
| | R81 | NRSA63J-475N | RESISTOR | 4.7MΩ,1/16W |
| | | or NRSA63J-475NC | RESISTOR | 4.7MΩ,1/16W |
| | R83 | NRSA63J-272N | RESISTOR | 2.7kΩ,1/16W |
| | | or NRSA63J-272NC | RESISTOR | 2.7kΩ,1/16W |
| | R84 | NRSA63J-105N | RESISTOR | 1MΩ,1/16W |
| | | or NRSA63J-105NC | RESISTOR | 1MΩ,1/16W |
| | R85 | NRSA63J-155N | RESISTOR | 1.5MΩ,1/16W |
| | | or NRSA63J-155NC | RESISTOR | 1.5MΩ,1/16W |
| | C1 | NCS31HJ-101A | CAPACITOR | 100pF,50V |
| | C4 | NCS31HG-561A | CAPACITOR | 560pF,50V |
| | C8 | NCF31CZ-473A | CAPACITOR | 0.047μF,16V |
| | C9 | NCS31HJ-150A | CAPACITOR | 15pF,50V |
| | C11 | NCS31HJ-560A | CAPACITOR | 56pF,50V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C12 | NCS31HJ-220A | CAPACITOR | 22pF,50V |
| | C13 | NCS31HG-121A | CAPACITOR | 120pF,50V |
| | C14 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C16 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C17 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C18 | NCS31HJ-820A | CAPACITOR | 82pF,50V |
| | C19 | QETC1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C20 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C21 | QETC1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C22 | QETC1EM-475 | E CAPACITOR | 4.7μF,25V |
| | C23 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C24 | QEN61AM-226 | NP E CAPACITOR | 22μF,10V |
| | or | QENC1AM-226 | NP E CAPACITOR | 22μF,10V |
| | C25 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C26 | QETC0JM-337 | E CAPACITOR | 330μF,6.3V |
| | C27 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C29 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C30 | QETC1HM-225 | E CAPACITOR | 2.2μF,50V |
| | C31 | QETC1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C32 | NCS31HG-201A | CAPACITOR | 200pF,50V |
| | C33 | NCB31EK-223A | CAPACITOR | 0.022μF,25V |
| | C34 | QETC1EM-475 | E CAPACITOR | 4.7μF,25V |
| | C35 | NCS31HG-150A | CAPACITOR | 15pF,50V |
| | C36 | QETC1HM-105 | E CAPACITOR | 1μF,50V |
| | C37 | NCB31EK-223A | CAPACITOR | 0.022μF,25V |
| | C38 | NCS31HJ-101A | CAPACITOR | 100pF,50V |
| | C40 | NCS31HJ-390A | CAPACITOR | 39pF,50V |
| | C41 | NCF31CZ-104A | CAPACITOR | 0.1μF,16V |
| | C42 | QETC0JM-476 | E CAPACITOR | 47μF,6.3V |
| | C43 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C44 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C45 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C46 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C47 | QETC1HM-105 | E CAPACITOR | 1μF,50V |
| | C48 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C49 | NCB31HK-472A | CAPACITOR | 0.0047μF,50V |
| | C50 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C51 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C52 | QETC1HM-105 | E CAPACITOR | 1μF,50V |
| | C53 | QETC1CM-106 | E CAPACITOR | 10μF,16V |
| | C54 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C56 | QETC1EM-475 | E CAPACITOR | 4.7μF,25V |
| | C57 | QETC1EM-335 | E CAPACITOR | 3.3μF,25V |
| | C58 | QETC1EM-475 | E CAPACITOR | 4.7μF,25V |
| | C59 | NCF31CZ-473A | CAPACITOR | 0.047μF,16V |
| | C60 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C61 | QETC1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C62 | NCB31CK-333A | CAPACITOR | 0.033μF,16V |
| | C63 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C64 | QETC1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C65 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C66 | QETC1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C67 | NCF31CZ-473A | CAPACITOR | 0.047μF,16V |
| | C69 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C70 | NCF31CZ-473A | CAPACITOR | 0.047μF,16V |
| | C71 | NCB31HK-272A | CAPACITOR | 0.0027μF,50V |
| | C72 | QETC1EM-475 | E CAPACITOR | 4.7μF,25V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | C73 | QETC1HM-105 | E CAPACITOR | 1μF,50V |
| | C74 | QETC0JM-107 | E CAPACITOR | 100μF,6.3V |
| | C75 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C76 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C77 | QETC1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C78 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C79 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C80 | NCS31HJ-240A | CAPACITOR | 24pF,50V |
| | C82 | QETC1HM-225 | E CAPACITOR | 2.2μF,50V |
| | C84 | NCS31HJ-180A | CAPACITOR | 18pF,50V |
| | C91 | NCS31HJ-620A | CAPACITOR | 62pF,50V |
| | C93 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C95 | NCS31HJ-120A | CAPACITOR | 12pF,50V |
| | C96 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C97 | NCF31CZ-104A | CAPACITOR | 0.1μF,16V |
| | C98 | NCB31HK-102A | CAPACITOR | 0.001μF,50V |
| | C99 | NCS31HJ-180A | CAPACITOR | 18pF,50V |
| | C100 | NCS31HG-361A | CAPACITOR | 360pF,50V |
| | L3 | PU59152-330J | COIL | 33μH |
| | L4 | PU59152-330J | COIL | 33μH |
| | L5 | PU59152-330J | COIL | 33μH |
| | L6 | PU59152-820J | COIL | 82μH |
| | L7 | PU59152-221J | COIL | 220μH |
| | L8 | PU48530-101K | COIL | 100μH |
| | L9 | PU48530-101K | COIL | 100μH |
| | L10 | PU59152-680J | COIL | 68μH |
| | L11 | PU48530-101K | COIL | 100μH |
| | L12 | PU48530-101K | COIL | 100μH |
| | L13 | PU48530-561J | COIL | 560μH |
| | L14 | PU48530-222J | COIL | 2.2mH |
| | L15 | PU59152-150J | COIL | 15μH |
| | L16 | PU59152-820J | COIL | 82μH |
| | LPF1 | PELN0477 | LOW PASS FILTER | |
| | LPF2 | PELN0478 | LOW PASS FILTER | |
| | LPF3 | PU60128-2 | LOW PASS FILTER | |
| | DL1 | PU60490 | COMB FILTER | |
| | or | PU60222 | 2H DELAY LINE | |
| | or | PU60340-2 | COMB FILTER | |
| ⚠ | X1 | PEVB0386 | CRYSTAL RESONATOR | |
| | SLD1 | PQ45174 | SHIELD PLATE | |
| | SLD2 | PQ45173 | SHIELD CASE | |
| | CN1 | PEMC0712-113 | PIN HEADER | |
| | CN2 | PEMC0712-113 | PIN HEADER | |
| | CN3 | PEMC0712-113 | PIN HEADER | |

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## TUNER UNIT BOARD ASSEMBLY <07>

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|---|---|---|---|
| | PWBA | PB10522A-01 | TUNER/IF BOARD ASSY |
| ⚠ | TNR1 | PERF0066 | UHF/VHF TUNER |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | IC1 | LA7575 | IC | |
| | Q1 | 2SB810H,J | TRANSISTOR | |
| | Q2 | 2SD1450S,T | TRANSISTOR | |
| | Q3 | 2SD1450S,T | TRANSISTOR | |
| | Q4 | 2SD1819A(RS) | TRANSISTOR | |
| | Q5 | 2SK381(C) | FE TRANSISTOR | |
| | Q6 | DTC144EU | TRANSISTOR | |
| | Q7 | DTA144EU | TRANSISTOR | |
| | Q8 | 2SA1532(C) | TRANSISTOR | |
| | Q15 | 2SD1819A(RS) | TRANSISTOR | |
| | Q16 | DTC144EU | TRANSISTOR | |
| | Q17 | 2SD1819A(RS) | TRANSISTOR | |
| | Q18 | DTC144EU | TRANSISTOR | |
| | Q19 | 2SD1819A(RS) | TRANSISTOR | |
| | Q21 | 2SA1532(C) | TRANSISTOR | |
| | D1 | E-452-2 | DIODE | |
| | D2 | HZT33-02 | ZENER DIODE | |
| | D4 | MTZ11B | ZENER DIODE | |
| | R1 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | R2 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | R3 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | R13 | NRSA63J-104N | RESISTOR | 100kΩ,1/16W |
| | R19 | QRSA08J-223YN | RESISTOR | 22kΩ,1/10W |
| | R23 | QRD161J-151 | RESISTOR | 150Ω,1/6W |
| | R32 | NRSA63J-182N | RESISTOR | 1.8kΩ,1/16W |
| | R33 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | R34 | NRSA63J-153N | RESISTOR | 15kΩ,1/16W |
| | R41 | NRSA63J-750N | RESISTOR | 75Ω,1/16W |
| | R45 | NRSA63J-750N | RESISTOR | 75Ω,1/16W |
| | R48 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | R51 | QRD161J-331 | RESISTOR | 330Ω,1/6W |
| | R52 | NRSA63J-101N | RESISTOR | 100Ω,1/16W |
| | R54 | NRSA63J-824N | RESISTOR | 820kΩ,1/16W |
| | R59 | NRSA63J-151N | RESISTOR | 150Ω,1/16W |
| | R61 | NRSA63J-151N | RESISTOR | 150Ω,1/16W |
| | R63 | NRSA63J-102N | RESISTOR | 1kΩ,1/16W |
| | R65 | NRSA63J-910N | RESISTOR | 91Ω,1/16W |
| | R66 | NRSA63J-911N | RESISTOR | 910Ω,1/16W |
| | R67 | NRSA63J-331N | RESISTOR | 330Ω,1/16W |
| | R70 | QRD161J-471 | RESISTOR | 470Ω,1/6W |
| | R71 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | R72 | QVZ3518-333 | V RESISTOR,RF AGC | 33kΩ |
| | R74 | NRSA63J-182N | RESISTOR | 1.8kΩ,1/16W |
| | R76 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | R78 | NRSA63J-153N | RESISTOR | 15kΩ,1/16W |
| | R79 | NRSA63J-153N | RESISTOR | 15kΩ,1/16W |
| | R80 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | R81 | NRSA63J-222N | RESISTOR | 2.2kΩ,1/16W |
| | R82 | QRSA08J-471YN | RESISTOR | 470Ω,1/10W |
| | R83 | NRSA63J-822N | RESISTOR | 8.2kΩ,1/16W |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R84 | NRSA63J-105N | RESISTOR | 1MΩ,1/16W |
| | R85 | NRSA63J-623N | RESISTOR | 62kΩ,1/16W |
| | R86 | NRSA63J-273N | RESISTOR | 27kΩ,1/16W |
| | R87 | NRSA63J-681N | RESISTOR | 680Ω,1/16W |
| | R89 | NRSA63J-471N | RESISTOR | 470Ω,1/16W |
| | R91 | QRSA08J-184YN | RESISTOR | 180kΩ,1/10W |
| | R92 | NRSA63J-223N | RESISTOR | 22kΩ,1/16W |
| | R93 | NRSA63J-103N | RESISTOR | 10kΩ,1/16W |
| | R94 | NRSA63J-822N | RESISTOR | 8.2kΩ,1/16W |
| | R95 | NRSA63J-332N | RESISTOR | 3.3kΩ,1/16W |
| | R96 | NRSA63J-392N | RESISTOR | 3.9kΩ,1/16W |
| | R97 | NRSA63J-682N | RESISTOR | 6.8kΩ,1/16W |
| | R105 | NRSA63J-222N | RESISTOR | 2.2kΩ,1/16W |
| | C2 | NCS31HJ-471A | CAPACITOR | 470pF,50V |
| | C3 | QCBB1HK-102 | CAPACITOR | 0.001μF,50V |
| | C5 | QETF1CM-476 | E CAPACITOR | 47μF,16V |
| | C6 | NCB31HK-102A | CAPACITOR | 0.001μF,50V |
| | C8 | QETF1HM-106 | E CAPACITOR | 10μF,50V |
| | C12 | QETF1CM-106 | E CAPACITOR | 10μF,16V |
| | C16 | QETF1HM-225 | E CAPACITOR | 2.2μF,50V |
| | C20 | QETF1CM-106 | E CAPACITOR | 10μF,16V |
| | C25 | QETF1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C34 | NCT06CH-3R0A | CAPACITOR | 3pF,50V |
| | C35 | NCT06CH-4R0A | CAPACITOR | 4pF,50V |
| | C37 | NRSA63J-0R0N | RESISTOR | 0Ω,1/16W |
| | C39 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C41 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C42 | QETF1CM-476 | E CAPACITOR | 47μF,16V |
| | C43 | NCB31HK-222A | CAPACITOR | 0.0022μF,50V |
| | C44 | QETF1CM-476 | E CAPACITOR | 47μF,16V |
| | C47 | QFN31HK-683 | M CAPACITOR | 0.068μF,50V |
| | C48 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C50 | QETF1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C51 | NCS31HJ-750A | CAPACITOR | 75pF,50V |
| | C53 | NCS31HJ-120A | CAPACITOR | 12pF,50V |
| | C55 | NCB31HK-222A | CAPACITOR | 0.0022μF,50V |
| | C56 | QETC1CM-336 | E CAPACITOR | 33μF,16V |
| | C60 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C61 | NCS31HJ-331A | CAPACITOR | 330pF,50V |
| | C62 | QETF1HM-474 | E CAPACITOR | 0.47μF,50V |
| | C63 | NCF31HZ-103A | CAPACITOR | 0.01μF,50V |
| | C66 | NCB31HK-102A | CAPACITOR | 0.001μF,50V |
| | C67 | QFV81HJ-103 | TF CAPACITOR | 0.01μF,50V |
| | C68 | QETF1HM-105 | E CAPACITOR | 1μF,50V |
| | C69 | NCB31HK-222A | CAPACITOR | 0.0022μF,50V |
| | C71 | QETC1HM-104 | E CAPACITOR | 0.1μF,50V |
| | C73 | NCB31HK-681A | CAPACITOR | 680pF,50V |
| | C74 | NCT06CH-820A | CAPACITOR | 82pF,50V |
| | L2 | PU60025-1R2 | COIL | 1.2μH |
| | L3 | PU60025-1R5 | COIL | 1.5μH |
| | L6 | PU59152-6R8J | COIL | 6.8μH |
| | L7 | PU59152-6R8J | COIL | 6.8μH |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | L8 | PU59152-8R2J | COIL | 8.2μH |
| | L9 | PU59152-120J | COIL | 12μH |
| | L10 | PU59152-101J | COIL | 100μH |
| | CF1 | PU32990-2 | CERAMIC FILTER | |
| | CF2 | PU60774-2 | CERAMIC FILTER | |
| | SAW1 | PU35557-7 | SAW FILTER | |
| | T1 | PELN0444 | IF.TRANSFORMER,VCO | |
| | T3 | PELN0442 | COIL,FM DET | |
| | T4 | PELN0449 | LC TRAP | |
| | SLD1 | PQ33906-1-2 | SHIELD PLATE | |
| | CN1 | PEMC0825-009 | B TO B CONN | |
| | CN2 | PEMC0825-009 | B TO B CONN | |

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## AUDIO CONTROL HEAD BOARD <12>

| | | | |
|---|---|---|---|
| | PWB1 | PB40068 | A/CTL HEAD PWB |
| | CN1 | PU58844-107 | CAP HOUSING |

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## TIMER/DISPLAY/SW BOARD ASSEMBLY <21>

| | | | |
|---|---|---|---|
| | PWBA | PB10504A-02 | T/D/S BOARD ASSY |
| | IC1 | UPD75216ACW-C03 | IC |
| | or | UPD75P216ACWC03 | IC |
| | IC2 | IC-PST523H-2 | IC |
| | IC101 | GP1U541X | IR DETECT UNIT |
| | Q1 | 2SC3199(G) | TRANSISTOR |
| | or | 2SC3311A(RS) | TRANSISTOR |
| | or | 2SC536SPA(FG) | TRANSISTOR |
| | or | 2SC1740S(RS) | TRANSISTOR |
| | D1 | RD9.1ES-T1B2 | ZENER DIODE |
| | D2 | 1SS133 | DIODE |
| | D3 | 1SS133 | DIODE |
| | D4 | 11ES2 | DIODE |
| | D5 | 11ES2 | DIODE |
| | D7 | 1SS133 | DIODE |
| | D8 | RD5.6ES-T1B2 | ZENER DIODE |
| | D9 | 1SS132 | DIODE |
| | D10 | 1SS132 | DIODE |
| | D101 | SLH-34VC3F | LE DIODE,POWER |
| | D102 | SLH-34MC3F | LE DIODE,AUTO TRACKING |
| | D111 | 1SS132 | DIODE |
| | D112 | 1SS132 | DIODE |
| | D115 | 1SS132 | DIODE |
| | D116 | 1SS132 | DIODE |
| | D117 | 1SS132 | DIODE |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | D118 | 1SS132 | DIODE | |
| | D129 | 1SS132 | DIODE | |
| | D140 | 1SS132 | DIODE | |
| | R1 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R2 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R3 | QRD161J-273 | RESISTOR | 27kΩ,1/6W |
| | R4 | QRD161J-682 | RESISTOR | 6.8kΩ,1/6W |
| | R5 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R6 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R7 | QRD162J-102 | RESISTOR | 1kΩ,1/6W |
| | R8 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R9 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R10 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R11 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R12 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R13 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R14 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R15 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R16 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R17 | QRD161J-472 | RESISTOR | 4.7kΩ,1/6W |
| | R18 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R19 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R20 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R21 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R25 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R26 | QRD161J-103 | RESISTOR | 10kΩ,1/6W |
| | R30 | QRD161J-224 | RESISTOR | 220kΩ,1/6W |
| | R31 | QRD161J-151 | RESISTOR | 150Ω,1/6W |
| | R32 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R33 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R34 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R101 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | R102 | QRD161J-271 | RESISTOR | 270Ω,1/6W |
| | RA1 | QRB077J-104 | RESISTOR ARRAY | |
| | or | QRB079J-104 | NETWORK RESISTOR | |
| | C3 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C4 | QER61CM-106 | E CAPACITOR | 10μF,16V |
| | C5 | QEA40HZ-105 | E CAPACITOR (DOUBLE) | 1F,5.5V |
| | C6 | QAT3123-200 | TRIMMER CAPACITOR,TIMER CLOCK | 20pF |
| | C7 | QCSB1HJ-120 | CAPACITOR | 12pF,50V |
| | C11 | QER61CM-106 | E CAPACITOR | 10μF,16V |
| | C13 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C14 | QER61HM-106 | E CAPACITOR | 10μF,50V |
| | C15 | QCBB1HJ-101 | CAPACITOR | 100pF,50V |
| | C16 | QCBB1HJ-101 | CAPACITOR | 100pF,50V |
| | C17 | QCF11HP-473 | CAPACITOR | 0.047μF,50V |
| | C18 | QER61CM-106 | E CAPACITOR | 10μF,16V |
| | C19 | QER61CM-106 | E CAPACITOR | 10μF,16V |
| | C21 | QCVC1CN-103 | CAPACITOR | 0.01μF,16V |
| | C22 | QCC11EK-473 | CAPACITOR | 0.047μF,25V |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION |
|---|---|---|---|
| ⚠ | X1 | PU60226-4 | CRYSTAL RESONATOR |
| | S1 | PU60392-2-2 | TACT SWITCH,POWER |
| | S2 | PU60392-2-2 | TACT SWITCH,STOP |
| | S3 | PU60392-2-2 | TACT SWITCH,FF |
| | S4 | PU60392-2-2 | TACT SWITCH,REW |
| | S6 | PU60392-2-2 | TACT SWITCH,REC |
| | S7 | PU60392-2-2 | TACT SWITCH,PLAY |
| | S8 | PU60392-2-2 | TACT SWITCH,PAUSE |
| | S18 | PU60392-2-2 | TACT SWITCH,CLOCK ADJ |
| | S21 | PU60392-2-2 | TACT SWITCH,CANCEL |
| | S22 | PU60392-2-2 | TACT SWITCH,REPEAT |
| | S23 | PU60392-2-2 | TACT SWITCH,SELECT |
| | S24 | PU60392-2-2 | TACT SWITCH,TIMER |
| | S25 | PU60392-2-2 | TACT SWITCH,SET+ |
| | S26 | PU60392-2-2 | TACT SWITCH,SET- |
| | S28 | PU60392-2-2 | TACT SWITCH,DISPLY OFF |
| | S29 | PU60392-2-2 | TACT SWITCH,SEARCH |
| | S30 | PU60392-2-2 | TACT SWITCH,CH SET |
| | S32 | PU60392-2-2 | TACT SWITCH,CNT/REM/DATE |
| | S405 | PESW0550 | SLIDE SWITCH,REPEAT |
| | FDP1 | PEDP0039 | FLUORESCENT DISPLAY PANEL |
| | CL1 | PU56729-2 | WIRE CLAMP |
| | HD1 | PQ33662 | FDP HOLDER(R) |
| | HD2 | PQ33661 | FDP HOLDER(L) |
| | HD3 | PQM30038-2-2 | LED HOLDER |
| | HD4 | PQM30038-1-2 | LED HOLDER |
| | CN1 | PU61044-4 | CONNECTOR |
| | CN2 | PU61044-10 | CONNECTOR |

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## UPPER DRUM BOARD <41>

| | | | |
|---|---|---|---|
| | PWB1 | PDM3017 | BOARD (UPPER DRUM) |

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## PRE/REC AMP BOARD ASSEMBLY <43>

| | | | |
|---|---|---|---|
| | PWBA | PB20548B-01 | PRE/REC BOARD ASSY |
| | IC1 | LA7375 | IC |
| | Q1 | 2SA1309(RS) | TRANSISTOR |
| | | or 2SA1267(G)-TJK | TRANSISTOR |
| | Q2 | 2SC1740S(RS) | TRANSISTOR |
| | | or 2SC3199(G) | TRANSISTOR |
| | Q4 | 2SC1740S(RS) | TRANSISTOR |
| | | or 2SC3199(G) | TRANSISTOR |
| | D2 | 1SS133 | DIODE |
| | | or MA165 | DIODE |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | R2 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | R3 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R4 | QRD161J-222 | RESISTOR | 2.2kΩ,1/6W |
| | R5 | QRD161J-391 | RESISTOR | 390Ω,1/6W |
| | R6 | QRD161J-391 | RESISTOR | 390Ω,1/6W |
| | R7 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | R8 | QRD161J-562 | RESISTOR | 5.6kΩ,1/6W |
| | R9 | QRD161J-272 | RESISTOR | 2.7kΩ,1/6W |
| | R10 | QRD161J-621 | RESISTOR | 620Ω,1/6W |
| | R11 | QRD161J-132 | RESISTOR | 1.3kΩ,1/6W |
| | R12 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | R13 | QRD161J-681 | RESISTOR | 680Ω,1/6W |
| | R16 | QRD161J-122 | RESISTOR | 1.2kΩ,1/6W |
| | R17 | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R18 | QRD161J-223 | RESISTOR | 22kΩ,1/6W |
| | R19 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R20 | QRD162J-102 | RESISTOR | 1kΩ,1/6W |
| | R21 | QRD161J-333 | RESISTOR | 33kΩ,1/6W |
| | R22 | QRD161J-622 | RESISTOR | 6.2kΩ,1/6W |
| | R23 | QRD161J-102 | RESISTOR | 1kΩ,1/6W |
| | R24 | QRD161J-153 | RESISTOR | 15kΩ,1/6W |
| | R25 | QRD161J-682 | RESISTOR | 6.8kΩ,1/6W |
| | R28 | QRD161J-821 | RESISTOR | 820Ω,1/6W |
| | C2 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C3 | QCSB1HJ-300 | CAPACITOR | 30pF,50V |
| | C4 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C5 | QCSB1HJ-560 | CAPACITOR | 56pF,50V |
| | C6 | QCSB1HJ-100 | CAPACITOR | 10pF,50V |
| | C7 | QCBB1HJ-471 | CAPACITOR | 470pF,50V |
| | C9 | QEK40JM-227 | E CAPACITOR | 220μF,6.3V |
| | C10 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C11 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C14 | QFV11HJ-823 | MMT CAP | 0.082μF,50V |
| | C15 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C16 | QFV11HJ-224 | TF CAPACITOR | 0.22μF,50V |
| | C17 | QFV11HJ-224 | TF CAPACITOR | 0.22μF,50V |
| | C18 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C19 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C20 | QCBB1HJ-102 | CAPACITOR | 0.001μF,50V |
| | C24 | QCBB1HJ-820 | CAPACITOR | 82pF,50V |
| | C26 | QCVB1CN-103 | CAPACITOR | 0.01μF,16V |
| | C28 | QEE40JM-475 | TANTAL CAPACITOR | 4.7μF,6.3V |
| | C29 | QCSB1HJ-100 | CAPACITOR | 10pF,50V |
| | C30 | QER60JM-476 | E CAPACITOR | 47μF,6.3V |
| | C32 | QCBB1HJ-181 | CAPACITOR | 180pF,50V |
| | L3 | PU59152-470J | COIL | 47μH |
| | L4 | PU59152-470J | COIL | 47μH |
| | L5 | PU59152-330J | COIL | 33μH |
| | L6 | PU59152-121J | COIL | 120μH |
| | L7 | PU54223-101K | COIL | 100μH |
| | L10 | PU54223-101K | COIL | 100μH |
| | SLD1 | PQ32216-1-1 | SHIELD CASE(1) | |
| | TP3 | PU60142-2 | CONNECTOR | |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|
| | CN1 | PU58844-105 | CONNECTOR | |
| | CN2 | PU59555-103 | CONNECTOR | |
| | CN3 | PU59973-4 | CONNECTOR | |

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## DECK TERMINAL BOARD ASSEMBLY <51>

| | | | | |
|---|---|---|---|---|
| | PWBA | | PB10320E | DECK TERMINAL BOARD ASSY |
| | Q1 | | PU60625 | END SENSOR |
| | R3 | | QRD161J-331 | RESISTOR 330Ω,1/6W |
| | R4 | | QRD161J-331 | RESISTOR 330Ω,1/6W |
| | R5 | | QRD161J-331 | RESISTOR 330Ω,1/6W |
| | R8 | | NTH5D473KB | THERMISTOR |
| | | or | ERT-D2ZHK473S | NEGA THERMISTOR |
| | | or | NTH5D473KA | RESISTOR |
| | C1 | | QCVB1CM-103 | CAPACITOR 0.01μF,16V |
| | PS1 | | PS5705HR | PH INTERRUPTER |
| | PS2 | | PS5705HR | PH INTERRUPTER |
| | CN1 | | PEMC0722-017 | WIRE TRAP |
| | | or | PEMC0753-017 | WIRE TRAP |
| | CN2 | | PU60642 | CONNECTOR(7PIN) |
| | CN3 | | PU60640 | CONNECTOR(4PIN) |

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## LOADING MDA BOARD ASSEMBLY <55>

| | | | | |
|---|---|---|---|---|
| | PWBA2 | | PB10320A2-01 | LOADING MDA BOARD ASSY |
| ⚠ | IC1 | | BA6418N | IC |
| ⚠ | | or | XRA6418N | IC |
| | C1 | | QETA1CM-336 | E CAPACITOR 33μF,16V |
| | CN1 | | PU59555-104 | CAP HOUSING |

| ⚠ | REF. No. | PART No. | PART NAME, DESCRIPTION | |
|---|---|---|---|---|

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## CASSETTE HOUSING BOARD <56>

| | | | | |
|---|---|---|---|---|
| | PWB1 | | PB40061 | CASSETTE HOUSING BOARD |
| | Q2 | | PN268VI | PHOTO TRANSISTOR |
| | D1 | | UZ5.1BSB | ZENER DIODE |
| | | or | RD5.1ESB2 | ZENER DIODE |
| | R1 | | QRD162J-473 | RESISTOR 47kΩ,1/6W |
| | R2 | | QRD182J-681 | RESISTOR 680Ω,1/8W |
| | R3 | | QRD122J-102S | RESISTOR 1kΩ,1/2W |
| | C1 | | QCC11EJ-103 | CAPACITOR 0.01μF,25V |
| | PHS3 | | PU60629 | CASS.SENSOR |
| | TH1 | | ERT-D2FHJ503S | THERMISTOR |
| | CN2 | | PU60639 | 4PIN SOCKET |

# SECTION 6
# TECHNICAL INFORMATIONS

## 6.1 CPU pin functions

### 1. Mechacon CPU pin function (IC601)

| Pin No. | Symbol | I/O format | Label | IN/OUT | Contents |
|---|---|---|---|---|---|
| 1 | Vcc | — | Vcc | — | For the SYSTEM CONTROL, DC 5V (AL 5V) |
| 2 | VREF | — | Vref | | |
| 3 | DA | Analog | START SENS | I | LEADER TAPE DETECT (DET ON: L) |
| 4 | PWM | PWM | NC | — | NC |
| 5 | Port 6 4 | N-ch OPEN DRAIN | FM DET | I | AUTO TRACKING DATA IN |
| 6 | Port 6 3 | N-ch OPEN DRAIN | THERM | I | THERMIC CORRECTION (CAPSTAN BRAKE TIMING CONTROL) |
| 7 | Port 6 2 | N-ch OPEN DRAIN | MODE SENS A | I | MECHANISM MODE DETECT |
| 8 | Port 6 1 | N-ch OPEN DRAIN | MODE SENS B | I | MECHANISM MODE DETECT |
| 9 | Port 6 0 | N-ch OPEN DRAIN | MODE SENS C | I | MECHANISM MODE DETECT |
| 10 | AN 7 | Analog | REC SAFETY | I | DETECTS ERASE PROTECT TAB (TAB ABSENT: H) |
| 11 | AN 6 | Analog | END SENS | I | TRAILER TAPE DETECT (DET ON: L) |
| 12 | AN 5 | Analog | NC | — | NC |
| 13 | AN 4 | Analog | CAP. V | O | CAPSTAN MOTOR DRIVE VOLTAGE SERVO |
| 14 | Port 4 3 | N-ch OPEN DRAIN | DRUM. V | O | DRUM MOTOR DRIVE VOLTAGE SERVO |
| 15 | Port 4 2 | N-ch OPEN DRAIN | LCM 2 | O | LOADING MOTOR CONTROL |
| 16 | Port 4 1 | N-ch OPEN DRAIN | LCM 1 | O | LOADING MOTOR CONTROL |
| 17 | Port 4 0 | N-ch OPEN DRAIN | DRUM FF | I | REC TIMING CONTROL, DRUM ROTATION DETECT (25 Hz) |
| 18 | Port 3 7 | N-ch OPEN DRAIN | CTL PULSE | I | MODE DETECT (SP/LP), BLANK DETECT |
| 19 | Port 3 6 | N-ch OPEN DRAIN | CAP REV | O | CAPSTAN ROTATION CONTROL (REV: L) |
| 20 | Port 3 5 | N-ch OPEN DRAIN | V. PULSE | O | V PULSE CONTROL |
| 21 | Port 3 4 | N-ch OPEN DRAIN | NC | — | NC |
| 22 | Port 3 3 | N-ch OPEN DRAIN | NC | — | NC |
| 23 | Port 3 2 | N-ch OPEN DRAIN | REEL FG (SP) | I | REEL ROTATION DETECT/TAPE REMAIN |
| 24 | Port 3 1 | N-ch OPEN DRAIN | REEL FG (TU) | I | REEL ROTATION DETECT/TAPE REMAIN |
| 25 | Port 3 0 | N-ch OPEN DRAIN | SYNC DET | I | INPUT SIGNAL DETECT (NO SYNC: H) |
| 26 | $\overline{\text{INT-1}}$ | — | CAP FG | I | MODE (SP/LP) DETECT/BACK SPACE COUNT |
| 27 | CN Vss | — | CN Vss | I | GND |
| 28 | $\overline{\text{RESET}}$ | — | RESET | I | RESET AT CONNECT VCR TO AC |
| 29 | X IN | — | X IN | I | MAIN SYSTEM CLOCK |
| 30 | X OUT | — | X OUT | O | MAIN SYSTEM CLOCK |
| 31 | ø | — | NC | — | NC |
| 32 | Vss | — | Vss | — | GND |
| 33 | Port 5 7 | with Input Latch | R PAUSE | I | REMOTE PAUSE CONTROL (PAUSE ON: L) |
| 34 | Port 5 6 | with Input Latch | INDEX | I/O | VISS DATA WRITE/DETECT |
| 35 | Port 5 5 | with Input Latch | S. CLK | O | CLOCK |
| 36 | Port 5 4 | with Input Latch | S. DATA | O | SERVO CONTROL DATA OUTPUT |
| 37 | Port 5 3 | High Impedance | RENT | O | RENTAL MODE: L |
| 38 | Port 5 2 | High Impedance | TEXT | O | TEXT MODE: L |
| 39 | Port 5 1 | High Impedance | NC | — | NC |
| 40 | Port 5 0 | High Impedance | EDIT | O | EDIT MODE: L |
| 41 | Port 1 7 | N-ch OPEN DRAIN | REC START | O | REC START: L |
| 42 | Port 1 6 | N-ch OPEN DRAIN | SP | O | SP MODE: L |
| 43 | Port 1 5 | N-ch OPEN DRAIN | AUX | O | INPUT SIGNAL CONTROL (AUX: L) |
| 44 | Port 1 4 | N-ch OPEN DRAIN | REC | O | REC: L |
| 45 | Port 1 3 | N-ch OPEN DRAIN | P MUTE | O | PICTURE MUTE CONTROL (MUTE ON: L) |
| 46 | Port 1 2 | N-ch OPEN DRAIN | EE | O | EE: L |
| 47 | Port 1 1 | N-ch OPEN DRAIN | POWER ON | O | POWER ON: L |
| 48 | Port 1 0 | N-ch OPEN DRAIN | VIDEO | O | VIDEO MODE: L |
| 49 | Port 0 7 | N-ch OPEN DRAIN | A. MUTE | O | AUDIO MUTE CONTROL (MUTE ON: H) |
| 50 | Port 0 6 | N-ch OPEN DRAIN | CASS SENS | I | CASSETTE IN/OUT DETECT |
| 51 | Port 0 5 | N-ch OPEN DRAIN | M DATA | I/O | MEMORY IC CONTROL (DATA READ/WRITE) |
| 52 | Port 0 4 | N-ch OPEN DRAIN | TNR CTL | O | TNR MODE: H |
| 53 | Port 0 3 | N-ch OPEN DRAIN | V. UP | O | CAPSTAN ROTATION SPEED CONTROL (V. UP: H) |
| 54 | Port 0 2 | N-ch OPEN DRAIN | NC | — | NC |
| 55 | Port 0 1 | N-ch OPEN DRAIN | NC | — | NC |
| 56 | Port 0 0 | N-ch OPEN DRAIN | M CE | O | MEMORY IC CHIP ENABLE |
| 57 | Port 2 7 | C MOS | LP | O | LP MODE: L |
| 58 | Port 2 6 | C MOS | NC | — | NC |
| 59 | Port 2 5 | C MOS | PLL DATA | O | TUNING DATA OUTPUT |
| 60 | Port 2 4 | C MOS | PAUSE | O | CAPSTAN MOTOR SERVO (SERVO MODE H) |
| 61 | Port 2 3 | C MOS | SERVO | O | CAPSTAN MOTOR SERVO (SERVO MODE H) |
| 62 | Port 2 2 | C MOS | T. CLK | I | CLOCK |
| 63 | Port 2 1 | C MOS | T. DATA | I/O | M-CTL/TIMER CPU BUS DATA (16 BIT SERIAL) |
| 64 | Port 2 0 | C MOS | PLL LOCK | I | TUNING CHECK DATA INPUT |

**Table 6-1** Mechacon CPU pin function

## 2. IC1 pin function (Timer)

| Pin No. | Symbol | Label | I/O | Contents |
|---|---|---|---|---|
| 1 | S3 | Sd | O | SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT |
| 2 | S2 | Sc | | |
| 3 | S1 | Sb | | |
| 4 | S0 | Sa | | |
| 5 | P00/INT4 | POWER DOWN | I | POWER DOWN DETECT (P DOWN: L) |
| 6 | P01/SCK | OS CLK | — | NC |
| 7 | P02/SD | OS DATA | | |
| 8 | P03/SI | TEST | I | TEST POINT (TP1) |
| 9 | P10/INT0 | REMOTE | I | 16 bit REMOTE DATA INPUT (A/B CODE) |
| 10 | P11/INT1 | NC | — | NC |
| 11 | P12/INT2 | CNT PLS | O | COUNTER DATA INPUT |
| 12 | P13/T10 | CNT PLS | | |
| 13 | P20 | KS0 | I | KEY SCAN DATA INPUT |
| 14 | P21 | KS1 | | |
| 15 | P22 | KS2 | | |
| 16 | P23/BUZ | KS3 | | |
| 17 | P30 | TIMER DATA | I/O | TM (TIMER/M-CTL CPU) BUS : 16 bit SERIAL DATA |
| 18 | P31 | TIMER CLK | I | : CLOCK |
| 19 | P32 | SDA TA | I/O | VIDEO PROGRAMMING SYSTEM : $I^2$ C BUS DATA |
| 20 | P33 | SCL K | O | : CLOCK |
| 21 | P60 | NC | — | NC |
| 22 | P61 | NC | | |
| 23 | P62 | NC | | |
| 24 | P63 | NC | | |
| 25 | P40 | NC | | |
| 26 | P41 | NC | | |
| 27 | R42 | NC | | |
| 28 | P43 | NC | | |
| 29 | PP0 | NC | | |
| 30 | X1 | X1 | I | MAIN SYSTEM CLOCK |
| 31 | X2 | X2 | O | |
| 32 | Vss | Vss | — | GND |
| 33 | XT1 | XT1 | I | |
| 34 | XT2 | POWER | O | LED CONTROL (LED ON: L) |
| 35 | P50 | NC | — | NC |
| 36 | P51 | AUTO TRACK | O | LED CONTROL (LED ON: L) |
| 37 | P52 | NC | — | NC |
| 38 | P53 | NC | | |
| 39 | RESET | RESET | I | RESET AT CONNECT VCR TO AC |
| 40 | T0 | 10G | O | COLUMN DISPLAY DATA OUTPUT |
| 41 | T1 | 9G | | |
| 42 | T2 | 8G | | |
| 43 | T3 | 7G | | |
| 44 | T4 | 6G | | |
| 45 | T5 | 5G | | |
| 46 | T6 | 4G | | |
| 47 | T7 | 3G | | |
| 48 | T8 | 2G | | |
| 49 | T9 | 1G | | |
| 50 | T10/S15/PH3 | Sp | O | SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT |
| 51 | T11/S14/PH2 | So | | |
| 52 | T12/S13/PH1 | Sn | | |
| 53 | T13/S12/PH0 | Sm | | |
| 54 | T14/S11 | Sl | | |
| 55 | T15/S10 | Sk | | |
| 56 | VLOAD | VLOAD | I | FDP DRIVE |
| 57 | VPRE | VPRE | | |
| 58 | S9 | Sj | O | SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT<br>/KEY SCAN PULSE OUTPUT<br>/KEY SCAN PULSE OUTPUT<br>/KEY SCAN PULSE OUTPUT |
| 59 | S8 | Si | | |
| 60 | S7 | Sh | | |
| 61 | S6 | Sg | | |
| 62 | S6 | Sf | | |
| 63 | S4 | Se | | |
| 64 | VDD | VDD | — | 5 V For the SYSTEM CONTROL |

**Table 6-2** IC1 pin function

E. & O. E. No. 82235